

FANUC Series Oi-PF

PARAMETER MANUAL

B-64630EN/01

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In this manual we have tried as much as possible to describe all the various matters. However, we cannot describe all the matters which must not be done, or which cannot be done, because there are so many possibilities. Therefore, matters which are not especially described as possible in this manual should be regarded as "impossible".

DEFINITION OF WARNING, CAUTION, AND NOTE

This manual includes safety precautions for protecting the user and preventing damage to the machine. Precautions are classified into Warning and Caution according to their bearing on safety. Also, supplementary information is described as a Note. Read the Warning, Caution, and Note thoroughly before attempting to use the machine.

**WARNING**

Applied when there is a danger of the user being injured or when there is a danger of both the user being injured and the equipment being damaged if the approved procedure is not observed.

**CAUTION**

Applied when there is a danger of the equipment being damaged, if the approved procedure is not observed.

NOTE

The Note is used to indicate supplementary information other than Warning and Caution.

- Read this manual carefully, and store it in a safe place.

PREFACE

Applicable models

The models covered by this manual, and their abbreviations are :

Model name	Abbreviation	
FANUC Series 0i–PF	0i–PF	Series 0i–PF

NOTE

- 1 For details of parameters that are not described in this manual, please refer to FANUC Series 0i–F PARAMETER MANUAL (B-64610EN).

Description of parameters

Parameters are classified by data type as follows:

Data type	Valid data range	Remarks
Bit	0 or 1	
Bit machine group		
Bit path		
Bit axis		
Byte	-128 to 127 0 to 255	Some parameters handle these types of data as unsigned data.
Byte machine group		
Byte path		
Byte axis		
Word	-32768 to 32767 0 to 65535	Some parameters handle these types of data as unsigned data.
Word machine group		
Word path		
Word axis		
2-word	0 to ±999999999	Some parameters handle these types of data as unsigned data.
2-word machine group		
2-word path		
2-word axis		
Real	See the Standard Parameter Setting Tables.	
Real machine group		
Real path		
Real axis		

NOTE

- 1 Each of the parameters of the bit, bit machine group, bit path, and bit axis types consists of 8 bits for one data number (parameters with eight different meanings).
- 2 For machine group types, parameters corresponding to the maximum number of machine groups are present, so that independent data can be set for each machine group.
- 3 For path types, parameters corresponding to the maximum number of paths are present, so that independent data can be set for each path.
- 4 For axis types, parameters corresponding to the maximum number of control axes are present, so that independent data can be set for each control axis.
- 5 The valid data range for each data type indicates a general range. The range varies according to the parameters. For the valid data range of a specific parameter, see the explanation of the parameter.

- Standard parameter setting tables

This section defines the standard minimum data units and valid data ranges of the CNC parameters of the real type, real machine group type, real path type, real axis type, and real spindle type. The data type and unit of data of each parameter conform to the specifications of each function.

(A) Length and angle parameters (type 1)

Unit of data	Increment system	Minimum data unit	Valid data range	
mm deg.	IS-A	0.01	-999999.99	to +999999.99
	IS-B	0.001	-999999.999	to +999999.999
	IS-C	0.0001	-99999.9999	to +99999.9999
inch	IS-A	0.001	-99999.999	to +99999.999
	IS-B	0.0001	-99999.9999	to +99999.9999
	IS-C	0.00001	-9999.99999	to +9999.99999

(B) Length and angle parameters (type 2)

Unit of data	Increment system	Minimum data unit	Valid data range	
mm deg.	IS-A	0.01	0.00	to +999999.99
	IS-B	0.001	0.000	to +999999.999
	IS-C	0.0001	0.0000	to +99999.9999
inch	IS-A	0.001	0.000	to +99999.999
	IS-B	0.0001	0.0000	to +99999.9999
	IS-C	0.00001	0.00000	to +9999.99999

(C) Velocity and angular velocity parameters

Unit of data	Increment system	Minimum data unit	Valid data range	
mm/min degree/min	IS-A	0.01	0.0	to +999000.00
	IS-B	0.001	0.0	to +999000.000
	IS-C	0.0001	0.0	to +99999.9999
inch/min	IS-A	0.001	0.0	to +96000.000
	IS-B	0.0001	0.0	to +9600.0000
	IS-C	0.00001	0.0	to +4000.00000

If bit 7 (IESP) of parameter No. 1013 is set to 1, the valid data ranges for IS-C are extended as follows:

Unit of data	Increment system	Minimum data unit	Valid data range	
mm/min degree/min	IS-C	0.001	0.000	to +999000.000
inch/min	IS-C	0.0001	0.0000	to +9600.0000

(D) Acceleration and angular acceleration parameters

Unit of data	Increment system	Minimum data unit	Valid data range	
mm/sec ² deg./sec ²	IS-A	0.01	0.00	to +999999.99
	IS-B	0.001	0.000	to +999999.999
	IS-C	0.0001	0.0000	to +99999.9999
inch/sec ²	IS-A	0.001	0.000	to +99999.999
	IS-B	0.0001	0.0000	to +99999.9999
	IS-C	0.00001	0.00000	to +9999.99999

If bit 7 (IESP) of parameter No. 1013 is set to 1, the valid data ranges for IS-C are extended as follows:

Unit of data	Increment system	Minimum data unit	Valid data range
mm/min degree/min	IS-C	0.001	0.000 to +999999.999
inch/min	IS-C	0.0001	0.0000 to +99999.9999

**CAUTION**

- 1 Values are rounded up or down to the nearest multiples of the minimum data unit.
- 2 A valid data range means data input limits, and may differ from values representing actual performance.
- 3 For information on the ranges of commands to the CNC, refer to Appendix D, "Range of Command Value" of the Operator's Manual (B-64624EN).

- Parameters of the bit type, bit machine group type, bit path type, and bit axis type

Data No.	Data (Data #0 to #7 are bit positions.)							
	#7	#6	#5	#4	#3	#2	#1	#0
0000			SEQ			INI	ISO	TVC

- Parameters other than the bit-type parameters above

Data No.	Data
1023	Number of the servo axis for each axis

NOTE

- 1 The bits left blank in “description of parameters” and parameter numbers that appear on the display but are not found in the parameter list are reserved for future expansion. They must always be 0.
- 2 When "to" is inserted between two parameter numbers, there are parameters with successive numbers between the two starting and ending parameter numbers, but those intermediate parameter numbers are omitted for convenience.
- 3 The lower-case letter "x" following the name of a bit-type parameter indicates the following:
 - "□□□x" : Bit axis type parameters

Related manuals of Series 0i-PF

The following table lists the manuals related to Series 0i-PF. This manual is indicated by an asterisk(*) .

Table 1 Related manuals

Manual name	Specification number	
FANUC Series 0i-F DESCRIPTIONS	B-64602EN	
FANUC Series 0i-F CONNECTION MANUAL (HARDWARE)	B-64603EN	
FANUC Series 0i-F CONNECTION MANUAL (FUNCTION)	B-64603EN-1	
FANUC Series 0i-PF CONNECTION MANUAL (FUNCTION)	B-64623EN	
FANUC Series 0i-PF OPERATOR'S MANUAL	B-64624EN	
FANUC Series 0i-F MAINTENANCE MANUAL	B-64605EN	
FANUC Series 0i-F PARAMETER MANUAL	B-64610EN	
FANUC Series 0i-PF PARAMETER MANUAL	B-64630EN	*
Programming		
Macro Executor PROGRAMMING MANUAL	B-63943EN-2	
Macro Compiler PROGRAMMING MANUAL	B-66263EN	
C Language Executor PROGRAMMING MANUAL	B-63943EN-3	
PMC		
PMC PROGRAMMING MANUAL	B-64513EN	
Network		
PROFIBUS-DP Board CONNECTION MANUAL	B-63993EN	
Industrial Ethernet CONNECTION MANUAL	B-64013EN	
Fast Ethernet / Fast Data Server OPERATOR'S MANUAL	B-64014EN	
DeviceNet Board CONNECTION MANUAL	B-64043EN	
FL-net Board CONNECTION MANUAL	B-64163EN	
CC-Link Board CONNECTION MANUAL	B-64463EN	
Dual Check Safety		
Dual Check Safety CONNECTION MANUAL	B-644483EN-2	

Related manuals of SERVO MOTOR αi series

The following table lists the manuals related to SERVO MOTOR αi series

Table 2 Related manuals

Manual name	Specification number
FANUC AC SERVO MOTOR αi series DESCRIPTIONS	B-65262EN
FANUC AC SERVO MOTOR αi series / FANUC AC SERVO MOTOR βi series / FANUC LINEAR MOTOR LiS series / FANUC SYNCHRONOUS BUILT-IN SERVO MOTOR DiS series PARAMETER MANUAL	B-65270EN
FANUC SERVO AMPLIFIER αi series DESCRIPTIONS	B-65282EN
FANUC AC SERVO MOTOR αi series / FANUC AC SPINDLE MOTOR αi series / FANUC SERVO AMPLIFIER αi series MAINTENANCE MANUAL	B-65285EN

This manual mainly assumes that the FANUC SERVO MOTOR αi series of servo motor is used. For servo motor information, refer to the manuals for the servo motor that are actually connected.

Related parameter manuals list of Series 0i-PF

The following is the related parameter manuals list of Series 0i-PF.

“FANUC Series 0i-PF PARAMETER MANUAL (B-64630EN)” is indicated by asterisk (*).

Table 3 Related parameter manuals list

Number	Parameter group	Manual name	Specification number
0~	SETTING	FANUC Series 0i-F PARAMETER MANUAL	B-64610EN
20~	RS232C INTERFACE		
300~	CNC SCREEN DISPLAY FUNCTIONS		
901~	ETHERNET/DATA SERVER FUNCTIONS		
960~	POWER MATE CNC		
970~	ETHERNET/FL-net FUNCTIONS		
980~	SYSTEM CONFIGURATION		
1000~	AXIS CONTROL/INCREMENT SYSTEM (1 OF 3)		
1201~	COORDINATE SYSTEM (1 OF 2)		
1300~	STORED STROKE CHECK		
1401~	FEEDRATE		
1601~	ACCELERATION/DECELERATION CONTROL		
1800~	SERVO (1 OF 2)		
2000~	DIGITAL SERVO	FANUC AC SERVO αi series PARAMETER MANUAL	B-65270EN
3001~	DI/DO (1 OF 2)	FANUC Series 0i-F PARAMETER MANUAL	B-64610EN
3100~	DISPLAY AND EDIT (1 OF 6)		
3400~	PROGRAMS (1 OF 4)		
3601~	PITCH ERROR COMPENSATION		
5000~	TOOL COMPENSATION (1 OF 3)		
5400~	SCALING/COORDINATE ROTATION		
5480~	NORMAL DIRECTION CONTROL		
5700~	STRAIGHTNESS COMPENSATION (1 OF 2)		
5861~	INCLINATION COMPENSATION		
6000~	CUSTOM MACROS		
6131~	POSITIONING BY OPTIMUM ACCELERATION		
6200~	SKIP FUNCTION		
6300~	EXTERNAL DATA INPUT/OUTPUT		
6350~	FINE TORQUE SENSING		

Number	Parameter group	Manual name	Specification number
6501~	GRAPHIC DISPLAY (1 OF 4)		
6581~	SCREEN DISPLAY COLORS (1 OF 2)		
6700~	RUN HOUR AND PARTS COUNT DISPLAY		
6901~	POSITION SWITCH FUNCTIONS		
7001~	MANUAL OPERATION AND AUTOMATIC OPERATION		
7100~	MANUAL HANDLE (1 OF 2)		
7180~	REFERENCE POSITION WITH MECHANICAL STOPPER		
7200~	SOFTWARE OPERATOR'S PANEL		
7300~	PROGRAM RESTART (1 OF 2)		
8001~	AXIS CONTROL BY PMC (1 OF 3)		
8100~	MULTI-PATH CONTROL		
8301~	AXIS SYNCHRONOUS CONTROL		
8341~	SEQUENCE NUMBER COMPARISON AND STOP		
8412~	AI CONTOUR CONTROL (1 OF 2)		
8500~	HIGH-SPEED POSITION SWITCH (1 OF 2)		
8650~	OTHER PARAMETERS		
8850~	MAINTENANCE		
10000~	THE INCORRECT OPERATION PREVENTION FUNCTION		
10340~	AUTOMATIC DATA BACKUP		
10345~	AXIS CONTROL		
10370~	AXIS SWITCHING		
10410~	TOOL RETRACT AND RECOVER		
10421~	SCREEN DISPLAY COLORS (2 OF 2)		
10500~	DUAL CHECK SAFETY (1 OF 2)	Dual Check Safety CONNECTION MANUAL	B-64483EN-2
10600~	WAVEFORM DIAGNOSIS	FANUC Series 0i-F PARAMETER MANUAL	B-64610EN
11222~	AXIS CONTROL/INCREMENT SYSTEM (2 OF 3)		
11223~	DI/DO (2 OF 2)		
11230~	FEEDRATE CONTROL AND ACCELERATION/DECELERATION CONTROL		
11250~	PROGRAM RESTART (2 OF 2)		
11275~	COORDINATE SYSTEM (2 OF 2)		
11290~	PROGRAMS (2 OF 4)		
11300~	DISPLAY AND EDIT (2 OF 6)		
11311~	EMBEDDED MACRO (1 OF 2)		
11317~	DISPLAY AND EDIT (3 OF 6)		
11329~	GRAPHIC DISPLAY (2 OF 4)		
11350~	DISPLAY AND EDIT (4 OF 6)		
11400~	TOOL COMPENSATION (2 OF 3)		
11501~	PROGRAMS (3 OF 4)		
11802~	SERVO (2 OF 2)		
11850~	AXIS CONTROL BY PMC (2 OF 3)		
11900~	PMC		
12020~	EMBEDDED MACRO (2 OF 2)		
12201~	HIGH-SPEED POSITION SWITCH (2 OF 2)		
12255~	MALFUNCTION PROTECTION		
12300~	MANUAL HANDLE (2 OF 2)		
12730~	AXIS CONTROL BY PMC (3 OF 3)		
12750~	EXTERNAL DECELERATION POSITIONS EXPANSION		
12801~	DISPLAY AND EDIT (5 OF 6)		

Number	Parameter group	Manual name	Specification number	
13301~	STRAIGHTNESS COMPENSATION (2 OF 2)			
13450~	PROGRAMS (4 OF 4)			
13730~	PARAMETER CHECK SUM FUNCTION			
13810~	DUAL CHECK SAFETY (2 OF 2)	Dual Check Safety CONNECTION MANUAL	B-64483EN-2	
13850~	SAFETY FUNCTION BY FL-net	FL-net Board CONNECTION MANUAL	B-64163EN	
14000~	AXIS CONTROL/INCREMENT SYSTEM (3 OF 3)	FANUC Series 0i-F PARAMETER MANUAL	B-64610EN	
14010~	LINEAR SCALE WITH ABSOLUTE ADDRESS REFERENCE POSITION			
14476~	FSSB (1 OF 2)			
14500~	SERVO GUIDE Mate			
14706~	GRAPHIC DISPLAY (3 OF 4)			
14880~	EMBEDDED ETHERNET			
16000~	PRESS FUNCTION	FANUC Series 0i-PF PARAMETER MANUAL	B-64630EN	*
16050~	SPEED AND LOOP GAIN SWITCH			
16181~	NIBBLING FUNCTION			
16200~	PATTERN FUNCTION AND THE U/V/W MACRO FUNCTION (1 OF 2)			
16240~	PUNCH/LASER MODE SWITCH			
16260~	TOOL FUNCTION (T FUNCTION) (1 OF 2)			
16360~	C-AXIS CONTROL			
16500~	SAFETY ZONE (1 OF 2)			
16600~	DI/DO SIGNALS			
16610~	Y-AXIS CRACK CANCEL			
16680~	TOOL FUNCTION (T FUNCTION) (2 OF 2)			
16747~	PATTERN FUNCTION AND THE U/V/W MACRO FUNCTION (2 OF 2)			
16760~	RAM-AXIS CONTROL			
16800~	SPEED AND SERVO PARAMETER SWITCHING PARAMETERS			
16930~	SAFETY ZONE (2 OF 2)			
16960~	PROGRAM AUTO RESTART			
19540~	OPTIMAL TORQUE ACCELERATION/DECELERATION	FANUC Series 0i-F PARAMETER MANUAL	B-64610EN	
24000~	FSSB (2 OF 2)			
24901~	DISPLAY AND EDIT (6 OF 6)			
27350~	GRAPHIC DISPLAY (4 OF 4)			

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1

PARAMETERS FOR THE PRESS FUNCTION

	#7	#6	#5	#4	#3	#2	#1	#0
16000	PEI	NFI	PFI		YSG	RPF		

NOTE

When this parameter is set, the power must be turned off before operation is continued.

[Input type] Parameter input

[Data type] Bit path

#2 RPF When the RESET key is pressed or when external reset, reset and rewind, or emergency stop is activated, the PF signal to start pressing is:

0: Set to "0".

1: Not set to "0".

#3 YSG A signal for the press function assigned to an Y address is:

0: Fixed at the address <Y004>.

1: Able to be reassigned to an arbitrary Y address.



WARNING

If bit 3 (YSG) of parameter No.16000 is set to 1, parameter No. 16046 shall be set.

If the address set to parameter No. 16046 is used by another usage, it may cause an unexpected machine behavior. Be careful enough that you must prevent the competition of the used address.

#5 PFI The logic of the *PFIN signal to complete punching for single-cycle pressing is:

0: The same as the logic described in the "Connection Manual."

1: The reverse of the logic described in the "Connection Manual."

#6 NFI The logic of the *NFIN signal to complete punching for continuous pressing is:

0: The same as the logic described in the "Connection Manual."

1: The reverse of the logic described in the "Connection Manual."

#7 PEI The logic of the *PE signal to stop pressing is:

0: The same as the logic described in the "Connection Manual."

1: The reverse of the logic described in the "Connection Manual."

1.PARAMETERS FOR THE PRESS FUNCTION

B-64630EN/01

	#7	#6	#5	#4	#3	#2	#1	#0
16001	CPF	MPF	PMA				PFE	MNP

[Input type] Parameter input

[Data type] Bit path

#0 MNP If there remains a distance to be traveled when automatic operation is halted, manual pressing or continuous manual pressing is:
 0: Valid.
 1: Invalid.

#1 PFE When the PF signal to start pressing is set to “1”, the absolute value of positional deviation for the X- and Y- axes:
 0: Need not be less than or equal to the value set in parameter No. 16010.
 1: Must be less than or equal to the value set in parameter No. 16010.

#5 PMA When the AFL signal to lock auxiliary functions is set to “1”, M code signals for forming, repositioning, and nibbling are:
 0: Not output to the machine.
 1: Output to the machine.

#6 MPF In a block containing an M code, the PF signal to start pressing is:
 0: Not set to “1”.
 1: Set to “1”.
 PF is set to 1 when movement along an axis terminates or when completion of the miscellaneous function is returned.

#7 CPF At the end of the 01 group containing the G01, G02, or G03 code, the PF signal to start pressing is:
 0: Not set to “1”.
 1: Set to “1”.

	#7	#6	#5	#4	#3	#2	#1	#0
16002	EUP	PF9	PWB	SPR	PFB	PEM		AET

[Input type] Parameter input

[Data type] Bit path

#0 AET The timer for issuing the EF signal to start external operation in advance (parameter No. 16041) is:
 0: Disabled.
 1: Enabled.

#2 PEM MDI operation:
 0: Does not start pressing.
 1: Starts pressing.

#3 PFB The PFB signal to start pressing is:
 0: Enabled.
 1: Disabled.

#4 SPR The *SPR signal to halt automatic operation B is:
 0: Invalid.
 1: Valid.

#5 PWB The PFWB signal to wait for the start of pressing B is:

- 0: Invalid.
- 1: Valid.

#6 PF9 The time interval between setting of the PFB signal to start pressing B to “0” and setting of the PF signal to start pressing to “0” is set to the value in:

- 0: Parameter No. 16037.
- 1: Parameter No. 16038.

#7 EUP By executing the external operation function, the number of punching cycles is:

- 0: Not aggregated.
- 1: Aggregated.

One is added when the PF signal to start pressing and the EF signal to external operation are set to “1”.

	#7	#6	#5	#4	#3	#2	#1	#0
16003	NED	DPE	TCF			NPF		

[Input type] Parameter input

[Data type] Bit path

#2 NPF The G01, G02, or G03 code specified in normal direction control:

- 0: Sets PF to “1”.
- 1: Does not set PF to “1”.

Bit 2 (NPF) of parameter No. 16003 is validated when bit 7 (CPF) of parameter No. 16001 is set to 1.

#5 TCF After the OP signal indicating that automatic operation is in progress is set from “0” to “1”, the PF signal to start pressing is set to “1”:

- 0: Only when a T command is found.

This status is the same as the status in which the PFW signal to wait for the start of pressing is set to “1”.

- 1: Even if no T commands are found.

#6 DPE The relationship between the *PE signal to stop pressing and the EPE signal for ignoring the signal to stop pressing is as follows:

- 0: *PE is always validated irrespective of the status of EPE.
- 1: *PE is validated when EPE is set to “1”, and invalidated when EPE is set to “0”.

#7 NED After the last positioning ends in a nibbling block, the PF signal to start pressing is set to “0”:

- 0: When the contact of the *PE signal to stop pressing is set to “0”.

- 1: When the two contacts of the *NFIN signal to complete punching for continuous pressing and the *PE signal stop pressing are set to “0”.

16008	M code for setting the forming mode
16009	M code for canceling the forming mode

[Input type] Parameter input

[Data type] 2-word path

[Valid data range] 1 to 97

Parameter No. 16008 sets the M code for setting the forming mode.

Parameter No. 16009 sets the M code for canceling the forming mode.

16010**Upper limit of the position deviation at which PF is set to "1"**

[Input type] Parameter input

[Data type] Word axis

[Unit of data] Detection unit

[Valid data range] 0 to 32767

For each axis, parameter No. 16010 sets the upper limit of the positional deviation at which the PF signal to start pressing is set to "1". When the absolute value of the positional deviation does not exceed this highest limit, PF is set to "1".

Parameter No.16010 is validated when parameter bit 1 (PFE) of parameter No. 16001 is set to 1.

NOTE

The parameter can only be set for the X, Y, and C axes.

16011**Duration for which the start of positioning is delayed**

[Input type] Parameter input

[Data type] Word axis

[Unit of data] msec

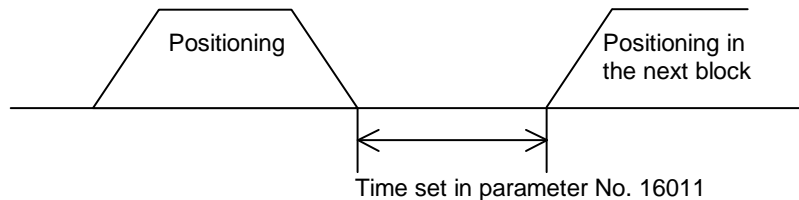
[Valid data range] 0 to 248

For each axis, parameter No. 16011 sets the duration for which the start of positioning is delayed.

NOTE

1 Only a multiple of 8 can be set for parameter No. 16011.

2 The parameter can only be set for the X, Y, and C axes.

**16012****Time interval by which setting of PF to "1" precedes completion of positioning**

[Input type] Parameter input

[Data type:] Byte axis

[Unit of data] msec

[Valid data range] -120 to 120

For each axis, parameter No. 16012 sets the time interval by which setting of the PF signal to start pressing to "1" precedes completion of positioning.(Function to advance setting of the PF signal)

NOTE

- 1 If a negative value is specified, the PF signal is set to “1” when the corresponding time period elapses after the completion of the positioning.
- 2 When bit 0 (OAD) of parameter No. 6131 is set to 1, the data is invalidated. If it is invalidated, see the descriptions of parameters Nos. 16857 to 16863.
- 3 The parameter can only be set for the X, Y, and C axes.

16030

**Time interval by which setting PF to “0” follows setting *PE to “0” in
single-cycle pressing**

[Input type] Parameter input

[Data type] Word path

[Unit of data] msec

[Valid data range] 0 to 248

Parameter No. 16030 sets the time interval by which setting the PF signal to start pressing to “0” follows setting the contact of the *PE signal to stop pressing to “0” in single-cycle pressing.

16031

**Time interval between completion of positioning and the start of the next
block when PFL is set to “1”**

[Input type] Parameter input

[Data type] Word path

[Unit of data] msec

[Valid data range] 0 to 248

Parameter No. 16031 sets the time interval between completion of positioning and the start of the next block when the PFL signal to lock the start of pressing is set to “1”.

16032

Time interval by which setting of PF to “1” follows positioning in the forming mode

[Input type] Parameter input

[Data type] Word path

[Unit of data] msec

[Valid data range] 0 to 248

Parameter No. 16032 sets the time interval by which setting the PF signal to start pressing to “1” follows positioning in the forming mode (except for nibbling).

16033

**Time interval by which the start of the next block follows setting of *PFIN to
“0” in the forming mode**

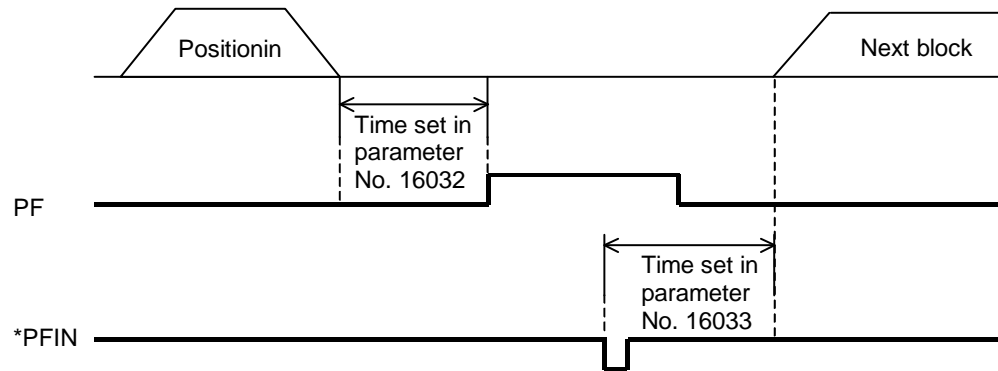
[Input type] Parameter input

[Data type] Word path

[Unit of data] msec

[Valid data range] 0 to 248

Parameter No. 16033 sets the time interval by which the start of the next block follows setting the contact of the *PFIN signal to complete punching for single-cycle pressing to “0” in the forming mode.

**16034****Time interval by which setting PF to "1" follows first positioning in nibbling**

[Input type] Parameter input

[Data type] Word path

[Unit of data] msec

[Valid data range] 0 to 248

Parameter No. 16034 sets the time interval by which setting the PF signal to start pressing to "1" follows positioning at the first punch point in nibbling (nibbling by G68, G69, and M code).

16035**Time interval by which the start of the next block follows setting *NFIN to "0" at the last positioning in nibbling**

[Input type] Parameter input

[Data type] Word path

[Unit of data] msec

[Valid data range] 0 to 248

Parameter No. 16035 sets the time interval by which the start of the next block follows setting the contact of the *NFIN signal to complete punching for continuous pressing to "0" at positioning at the last punch point in nibbling (nibbling by G68, G69, and M code).

16036**Minimum time interval by which setting of PF to "1" follows setting of *PFIN to "0" in single-cycle pressing**

[Input type] Parameter input

[Data type] Word path

[Unit of data] msec

[Valid data range] 0 to 248

Parameter No. 16036 sets the minimum time interval by which setting the PF signal to start pressing to "1" follows setting the contact of the *PFIN signal to complete punching for single-cycle pressing to "0" in single-cycle pressing. After the contact of *PFIN is set to "0", PF is set to "1" when the time set here elapses. PF is not set to "1" even if positioning for the next block completes and other conditions are satisfied before the time elapses.

16037**Time interval by which setting PFB to "1" follows setting PF to "1" and setting PF to "0" follows setting PFB to "0"**

[Input type] Parameter input

[Data type] Byte path

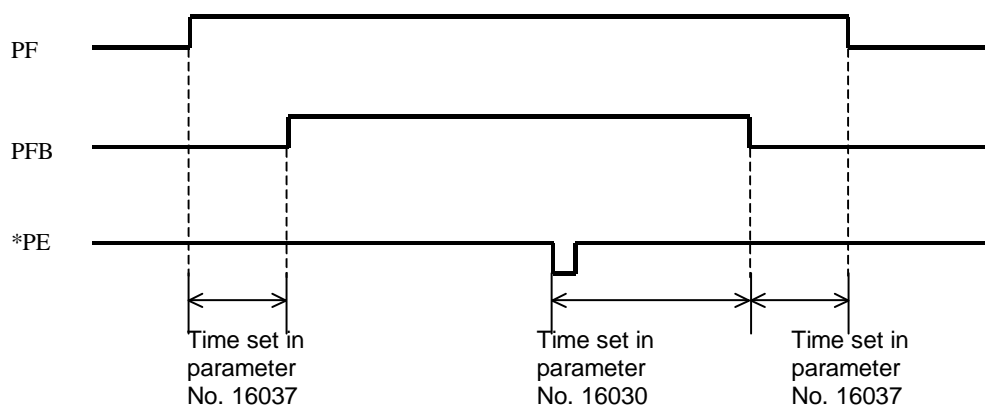
[Unit of data] msec

[Valid data range] 0 to 20

Parameter No. 16037 sets the time interval by which setting the PFB signal to start pressing B to 1 follows setting the PF signal to start pressing to “1” and setting PF to “0” follows setting PFB to “0”.

NOTE

The parameter must be set to 0 when the PFB signal is not used.

**16038****Time interval by which setting PF to “0” follows setting PFB to “0”**

[Input type] Parameter input

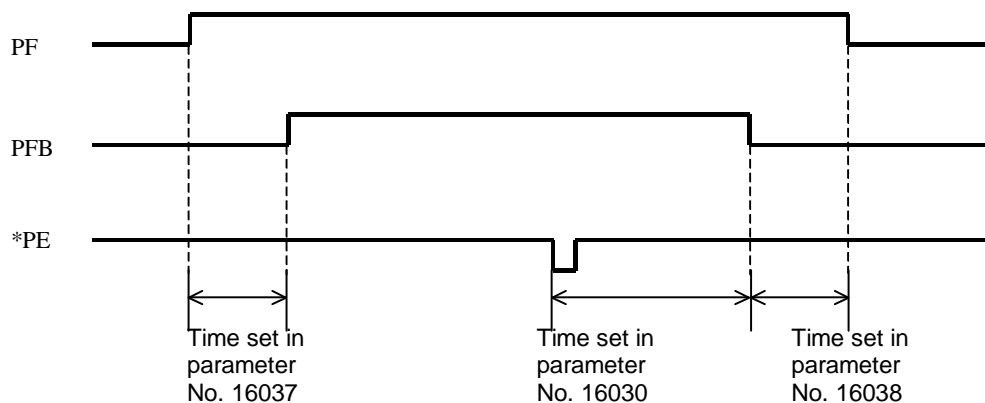
[Data type] Byte path

[Unit of data] msec

[Valid data range] 0 to 20

Parameter No. 16038 sets the time interval by which setting the PF signal to start pressing to “0” follows setting the PFB signal to start pressing B to “0”.

The data is validated when bit 6 (PF9) of parameter No. 16002 is set to 1.

**16039****Time interval by which setting PF to 0 follows setting *PE to “0” in nibbling**

[Input type] Parameter input

[Data type] Word path

[Unit of data] msec

[Valid data range] 0 to 248

Parameter No. 16039 sets the time interval by which setting the PF signal to start pressing to “0” follows setting the contact of the *PE signal to stop pressing to “0” in nibbling.

16040	Time interval by which the start of the next block follows setting *PFIN to “0”
--------------	--

[Input type] Parameter input
 [Data type] Word path
 [Unit of data] msec
 [Valid data range] 0 to 248
 Parameter No. 16040 sets the time interval by which the start of the next block follows setting the contact of the *PFIN signal to complete single-cycle pressing to “0” in a block where the PF signal to start pressing is set to “1” (except for the nibbling or forming mode).

16041	Time interval by which setting of EF to “1” precedes the completion of positioning
--------------	---

[Input type] Parameter input
 [Data type] Byte axis
 [Unit of data] msec
 [Valid data range] -120 to 120s
 This parameter sets the time interval by which setting of the EF signal to “1” by the external operation function precedes the completion of positioning. If a negative value is specified, the EF signal is set to “1” when the corresponding time period elapses after the completion of positioning.

16044	Punching count of every one program execution
--------------	--

[Input type] Setting input
 [Data type] 2-word path
 [Unit of data] count
 [Valid data range] 0 to 99999999
 This parameter sets the amount of punching count of every program execution
 In other words, this parameter sets the amount of punching count between cycle start performed and cycle start performed again
 When the CNC power-on and cycle start performed, this parameter sets 0
 This parameter counts up to 99999999, and counts from 0 again afterwards.

16045	X address to which press stop signal *PE, punch finish signal for 1-cycle press *PFIN, and the press start waiting signal B PFWB is assigned
--------------	---

NOTE

When this parameter is set, the power must be turned off before operation is continued.

[Input type] Parameter input
 [Data type] word path
 [Valid data range] 0 to 727
 Set an X address to which press stop signal *PE<X004.7>, punch finish signal for 1-cycle press *PFIN<X004.5>, and the press start waiting signal B PFWB<X004.4> is to be assigned.

NOTE

When bit 2 (XSG) of parameter No.3008 is set to 1, the data is validated.
 Depending on the option configuration of the I/O Link, the actually usable X addresses are:
 <X0000 to X0127>, <X0200 to X0327>, <X0400 to X0527>,
 <X0600 to X0727>

**WARNING**

If the address set to this parameter is used by another usage, it may cause an unexpected machine behavior. Be careful enough that you must prevent the competition of the used address.

16046**Address to which press start signal B PFB and press start signal PF is assigned****NOTE**

When this parameter is set, the power must be turned off before operation is continued.

[Input type] Parameter input

[Data type] word path

[Valid data range] 0 to 727

Set a Y address to which press start signal B PFB<Y004.3> and press start signal PF<Y004.2> is to be assigned.

NOTE

When bit 3 (YSG) of parameter No. 16000 is set to 1, the data is validated.
 Depending on the option configuration of the I/O Link, the actually usable Y addresses are:
 <Y0 to Y127>, <Y200 to Y327>, <Y400 to Y527>, <Y600 to Y727>

**WARNING**

If the address set to this parameter is used by another usage, it may cause an unexpected machine behavior. Be careful enough that you must prevent the competition of the used address.

16047**Delay time from the punch finish to the table axes movement start**

[Input type] Parameter input

[Data type] word path

[Unit of data] msec

[Valid data range] 0 to 248

Set the delay time from setting the punch finish signal for 1-cycle press *PFIN<X004.5> to "0" to the next block on account of compatible with FANUC Series 0i-PC.

2 PARAMETERS FOR THE SPEED AND LOOP GAIN SWITCH

	#7	#6	#5	#4	#3	#2	#1	#0
16050					NCT	N3S	PCF	G0F

NOTE

When this parameter is set, the power must be turned off before operation is continued.

[Input type] Parameter input

[Data type] Bit path

#0 G0F For a rapid traverse command (G00), the X-axis or Y-axis rapid traverse feedrate is set to the value:

0: Specified in the parameter.

1: Specified by the F code.

The maximum feedrate of the F command is limited to the rapid traverse feedrate in the parameter. Bit 0 (OADx) of parameter No.6131 and bit 0 (ILG) of parameter No.6132 are valid.

#1 PCF The X-axis or Y-axis movement mode is selected for the following blocks:

(1) Movement to each punch point with the pattern function (G26, G76, G77, G78, etc.)

(2) Operation in automatic repositioning (G75)

(3) Movement to the first punch point with the nibbling function (G68, G69, and M code)

0: Rapid traverse is executed.

1: For G00, rapid traverse is executed. For G01, G02, or G03, linear interpolation cutting feed is executed.

#2 N3S During nibbling, three-stage switching for constant positioning time control for the X- and Y-axes is:

0: Disabled

1: Enabled

When this parameter is set to 1, parameter Nos. 16800 to 16827 are also used.

#3 NCT Constant control of positioning time is:

0: Always enabled.

1: Enabled only when the nibbling command is executed.

This parameter is valid when the bit 6 (PT2x) of parameter No.16844 is set to 1.

	#7	#6	#5	#4	#3	#2	#1	#0
16051	PGC	PLG	VGC					

NOTE

When this parameter is set, the power must be turned off before operation is continued.

[Input type] Parameter input

[Data type] Bit path

#5 VGC During automatic operation, the velocity loop gain, position gain, and PI/IP control switching functions for the X- and Y-axes are:

0: Disabled

1: Enabled

When this parameter is set to 1, parameters N3S (bit 2 of No. 16050), OADx (bit 0 of No. 6131), PINx and PIPx (bits 3 and 2 of No. 16054), and Nos. 16828 to 16843 are also used.

#6 PLG When the punching and laser modes are used, the servo loop gains of X-axis and Y-axis position control in cutting feed:

0: Cannot be switched.

1: Can be switched.

#7 PGC Servo loop gains of X-axis and Y-axis position control to be used in rapid traverse and cutting feed:

0: Are the same.

1: Can be set separately.

See the description of parameter No. 16160.

Servo loop gains to be used in cutting feed are set in parameter No. 16160.

	#7	#6	#5	#4	#3	#2	#1	#0
16052			TJG					NJC

[Input type] Parameter input

[Data type] Bit path

#0 NJC The jog feedrate is:

0: Limited to the manual rapid traverse rate.

1: Not limited to the manual rapid traverse rate.

#5 TJG The jog override signals for the T-axis and C-axis *JVT1,*JVT2<Gn233.0,.1> are:

0: Not used.

1: Used.

*JVT2	*JVT1	T-axis or C-axis override
0	0	100%
0	1	75%
1	0	50%
1	1	25%

	#7	#6	#5	#4	#3	#2	#1	#0
16053					BLN	ROM	NOV	TMO

[Input type] Parameter input

[Data type] Bit path

#0 TMO Override for a linear acceleration/deceleration time constant for rapid traverse is:

0: Disabled

1: Enabled

#1 NOV While constant positioning time control is applied during nibbling, rapid traverse override is:

0: Disabled

1: Enabled

This parameter is valid when bit 2 (N3S) of parameter No. 16050 is set to 1.

NOTE

This parameter is valid when bit 2 (N3S) of parameter No. 16050 is set to 1.

#2 ROM Rapid traverse override is carried out:

0: According to the specification for the 0i–PF.

1: According to the specification for the 0i–MF.

The PF signal is issued in advance only when the override is 100%.

The constant positioning–time control function cannot be used.

#3 BLN For the nibbling command, rapid traverse bell-shaped acceleration/deceleration is:

0: Enabled.

1: Disabled.

	#7	#6	#5	#4	#3	#2	#1	#0
16054		NAZ			PIN	PIP		

NOTE

When this parameter is set, the power must be turned off before operation is continued.

[Input type] Parameter input

[Data type] Bit axis

#2 PIP Specifies a speed control type for the ordinary machining mode as follows:

0: IP control

1: PI control

NOTE

When bit 0 (OADx) of parameter No.6131 is set to 1 or bit 2 (N3S) of parameter No. 16050 is set to 1, this parameter is valid.

#3 PIN Specifies a speed control type for the nibbling mode as follows:

0: IP control

1: PI control

NOTE

When bit 0 (OADx) of parameter No.6131 is set to 1 or bit 2 (N3S) of parameter No. 16050 is set to 1, this parameter is valid.

#6 NAZ Specifies whether to make a return to the reference position of the CNC controlled axis using G28 as follows:

0: Make a return.

1: Do not make a return.

16160	Servo loop gain in cutting feed
-------	---------------------------------

[Input type] Parameter input

[Data type] Word axis

[Unit of data] 0.01/sec

[Valid data range] 1 to 9999

For each axis, the parameter sets the servo loop gain of position control in cutting feed.

NOTE

- 1 The parameter is validated when bit 7 (PGC) of parameter No. 16051 is set to 1.
- 2 The parameter can only be set for the X and Y axes.

16161**Servo loop gain in cutting feed When the punching modes is used**

[Input type] Parameter input

[Data type] Word axis

[Unit of data] 0.01/sec

[Valid data range] 1 to 9999

Sets the loop gain of each axis position control in cutting feed when the punching mode is used.

When the laser mode is used, the value set in parameter No.16160 is valid.

NOTE

- 1 The parameter is validated when bit 7 (PGC) of parameter No. 16051 and bit 6 (PLG) of parameter No. 16051 are set to 1.
- 2 The parameter can only be set for the X and Y axes.

3 PARAMETERS FOR THE NIBBLING FUNCTION

	#7	#6	#5	#4	#3	#2	#1	#0
16181		NEF	NPS	SN2	NPF	NSP	NPC	NMG

[Input type] Parameter input

[Data type] Bit path

#0 NMG When the M code for canceling the nibbling mode (No. 16184) is specified, the G code in the 01 group is:
 0: Not changed.
 1: Changed to G00 (rapid traverse).

#1 NPC The function to change maximum pitch in the nibbling mode between two levels is:
 0: Not used.
 1: Used.
 The function can be executed by the SNP signal for changing nibbling between two levels or by the M code (No. 16185).

#2 NSP When the *SP signal to halt automatic operation is set to “0” in nibbling, automatic operation is:
 0: Decelerated and halted immediately.
 1: Halted after positioning for a nibbling pitch completes.

#3 NPF In nibbling mode, a press sequence is:
 0: Executed according to signals, NBL and *NFIN.
 1: Executed according to signals PF, *PFIN, and *PE.
 When this parameter is set to 1, a press sequence is executed in the same way as a sequence for single-cycle press.

#4 SN2 Nibbling parameter switching control using an external signal is:
 0: Disabled
 1: Enabled

NOTE

- 1 This parameter is valid when bit 2 (N3S) of parameter No. 16050 is set to 1.
- 2 When using this parameter, set bit 1 (NPC) of parameter No.16181 to 0.

#5 NPS While nibbling parameter switching control using an external signal is applied, stage switching is:
 0: Performed according to the state of the external signal
 1: Performed according to the nibbling pitch

NOTE

- 1 This parameter is valid when bit 4 (SN2) of parameter No. 16181 is set to 1.
- 2 The nibbling pitch is checked by the state of signal SNP and SNP2.

#6 NEF In nibbling mode, the external operation function is:

0: Disabled.

1: Enabled.

16183

M code for setting the nibbling mode

[Input type] Parameter input

[Data type] Word path

[Valid data range] 1 to 255

Parameter No.16183 sets the M code for setting the nibbling mode.

16184

M code for canceling the nibbling mode

[Input type] Parameter input

[Data type] Word path

[Valid data range] 1 to 255

Parameter No. 16184 sets the M code for canceling the nibbling mode.

16185

M code for setting the nibbling mode in which nibbling is changed between two levels

[Input type] Parameter input

[Data type] Word path

[Valid data range] 1 to 255

Parameter No. 16185 sets the M code for setting the nibbling mode in which nibbling is changed between two levels.

NOTE

1 The data is validated when bit 1 (NPC) of parameter No. 16181 is set to 1.

2 The M code in parameter No. 16184 is used to cancel the nibbling mode if set.

16186

Maximum pitch that can be specified with G01, G02, or G03 for nibbling by G68 or G69 or by an M code

[Input type] Parameter input

[Data type] Real path

[Unit of data] mm, inch (input unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] Positive 9 digit of minimum unit of data

(When the increment system is IS-B, 0.001 to +999999.999)

Parameter No. 16186 specifies the maximum pitch that can be specified with G01, G02, or G03 for nibbling by G68 or G69 or by an M code.

16188

Maximum pitch of the G00 command for nibbling by the M code

[Input type] Parameter input

[Data type] Real path

[Unit of data] mm, inch (input unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] Positive 9 digit of minimum unit of data

(When the increment system is IS-B, 0.001 to +999999.999)

Parameter No. 16188 specifies the maximum pitch of the G00 command for nibbling by the M code.

16190	Maximum pitch that can be specified with G01, G02, or G03 for nibbling by G68 or G69 or by an M code (for changing nibbling between two levels) or Maximum pitch of 3rd level for the nibbling parameter switching control using an external signal
--------------	--

[Input type] Parameter input

[Data type] Real path

[Unit of data] mm, inch (input unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] Positive 9 digit of minimum unit of data
(When the increment system is IS-B, 0.001 to +999999.999)
When the 2nd level is executed while the function for changing nibbling maximum pitch between two levels is used, this parameter sets the maximum pitch that can be specified with G01, G02, or G03 for nibbling by G68 or G69 or by an M code.
When the nibbling parameter switching control using an external signal is used, this parameter sets the maximum pitch of 3rd level.

16192	Maximum pitch of G00 command by an M code (for changing nibbling between two levels
--------------	--

[Input type] Parameter input

[Data type] Real path

[Unit of data] mm, inch (input unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] Positive 9 digit of minimum unit of data
(When the increment system is IS-B, 0.001 to +999999.999)
When the 2nd level is executed while the function for changing nibbling maximum pitch between two levels is used, this parameter sets the maximum pitch of the G00 command by an M code.

16194	Maximum distance traveled along C-axis in nibbling
--------------	---

[Input type] Parameter input

[Data type] Real path

[Unit of data] degree (input unit)

[Min. unit of data] Depend on the increment system of the applied axis

[Valid data range] Positive 9 digit of minimum unit of data
(When the increment system is IS-B, 0.001 to +999999.999)
The parameter sets the maximum distance traveled along the C-axis for the nibbling mode.

4 PARAMETERS FOR THE PATTERN FUNCTION AND THE U/V/W MACRO FUNCTION (1 OF 2)

	#7	#6	#5	#4	#3	#2	#1	#0
16200	UVW	ABM	MUR					UVC

NOTE

When this parameter is set, the power must be turned off before operation is continued.

[Input type] Parameter input

[Data type] Bit path

#0 UVC In the reset status, the macro stored under a U or V macro number is:

- 0: Deleted.
- 1: Not deleted.

#5 MUR U or V macro numbers are handled:

- 0: According to the standard specifications.
 - Storage and execution: U1 to 59
 - Storage: U60 to 89
 - Representation of several macros: U90 to 99
- 1: According to the following specifications.
 - Storage and execution: U1 to 69、 90 to 99
 - Storage: U70 to 79
 - Representation of several macros: U80 to 89

Macro numbers are handled in the same way as when parameter No. 16206 of the G73 or G74 command for taking multiple workpieces is set to 2.

NOTE

When bit 5 (MUR) of parameter No.16200 is set to 1, parameter No. 16206 is invalidated.

#6 ABM To execute a macro function, addresses A, and B:

- 0: Are used.
- 1: Are not used. (The A and B axes can be used.)

#7 UVW To execute a macro function, addresses U, V, and W:

- 0: Are used.
- 1: Are not used. (The U, V, and W axes can be used.)

	#7	#6	#5	#4	#3	#2	#1	#0
16201	MSA	AWP	IPA	APR	MLP	MPC		LIP

[Input type] Parameter input

[Data type] Bit path

4. PARAMETERS FOR THE PATTERN FUNCTION AND THE U/V/W MACRO FUNCTION (1 OF 2)

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- #0 LIP** In the block immediately following setting a local coordinate system (G52), an incremental command specifies an incremental value from:
 0: The origin of the local coordinate system.
 1: The current tool position.
- #2 MPC** When the number of machined workpieces is counted in multiple-workpiece machining:
 0: The number of actually machined workpieces is counted.
 1: The number is incremented by one when complete machining or remainder machining is executed (but not when trial machining is executed).
- #3 MLP** Setting for taking multiple workpieces depends on:
 0: The set parameter (No.16206).
 1: A signal (MLP1 or MLP2) input from the PMC machine.
- #4 APR** Upon reset, the compensation value of the reference point in the workpiece coordinate system in the cause of repositioning
 0: Not cleared.
 1: Added to the workpiece coordinate system and cleared.
- #5 IPA** Although positioning is to be executed in the block immediately following execution of the pattern function (including G68 or G69), only a command for either the X- or Y-axis is specified. Movement to the pattern reference point:
 0: Is not executed for the axis which is not specified.
 1: Is executed for the axis which is not specified.
- #6 AWP** When a workpiece coordinate system is specified, automatic coordinate system setting is executed as designed for:
 0: The FANUC Series 0i-MF
 When manual return to the reference position is completed, the origin of the coordinate system is shifted by the amount set for the selected workpiece coordinate system (G54 to G59).
 1: The FANUC Series 0i-PF.
 When manual return to the reference position is completed, the coordinates of the automatic coordinate system setting are shifted by the amount set for the selected workpiece coordinate system (G54 to G59).
- #7 MSA** When the MUR bit (bit 5 of parameter No. 16200) is set to 1, the machining pattern set for multiple-workpiece machining is:
 0: Disabled.
 When this is selected, the value of parameter No. 16206 is always assumed to be 2.
 1: Enabled.

	#7	#6	#5	#4	#3	#2	#1	#0
16202								AIP

[Input type] Parameter input
 [Data type] Bit path

- #0 AIP** Specifies the condition for the share-proof command (G86).
 0: Alarm (PS4506) is issued when $I < 1.5P$.
 1: Alarm (PS4506) is issued when $I < P$.

4.PARAMETERS FOR THE PATTERN FUNCTION AND THE U/V/W MACRO FUNCTION (1 OF 2)

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	#7	#6	#5	#4	#3	#2	#1	#0
16203								PCU

[Input type] Parameter input

[Data type] Bit path

- #0 PCU** The number of machined workpieces is:
 0: Counted by an MDI command.
 1: Not counted by an MDI command.

	#7	#6	#5	#4	#3	#2	#1	#0
16204				PDG		BKR		

[Input type] Parameter input

[Data type] Bit path

- #2 BKR** The first automatic repositioning command (G75) that sets automatic operation signal OP from 0 to 1 uses:
 0: The values set in parameter No. 16209 as the clearance and amount of return for the Y-axis.
 (The clearance and amount of return are identical values.)
 1: The values set in parameter No. 16209 as the clearance for the Y-axis, and the values set in parameter No. 16211 as the amount of return.
 (The clearance and amount of return are different values.)

- #4 PDG** On the graphic screen, a program being drawn is:
 0: Not displayed.
 1: Displayed.

	#7	#6	#5	#4	#3	#2	#1	#0
16205								SZR

[Input type] Parameter input

[Data type] Bit path

- #0 SZR** Automatic reference position return (G28) commands:
 0: The axis returns directly to the reference position without passing through any intermediate points.
 1: The axis returns to the reference position via the specified intermediate point.

16206	Machining pattern when multiple workpieces are taken
--------------	---

[Input type] Setting input

[Data type] Byte path

[Valid data range] 0 to 3

Parameter No. 16206 sets a machining pattern when multiple workpieces are taken

Settable value	Machining process when multiple workpieces are taken
0	A program without the G73 or G74 command for machining when multiple workpieces are taken is used.
1	A program containing the G73 or G74 command is used and test machining is executed.

4. PARAMETERS FOR THE PATTERN FUNCTION AND THE U/V/W MACRO FUNCTION (1 OF 2)

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Settable value	Machining process when multiple workpieces are taken
2	A program containing the G73 or G74 command is used and the remaining processing is executed after test machining.
3	A program containing the G73 or G74 command is used and the entire machining is executed.

NOTE

- 1 When bit 3 (MLP) of parameter No.16201 is set to 0, parameter No. 16206 is validated.
- 2 When parameter No. 16206 is set to 0, alarm (PS4539) is issued if the G73 or G74 command is found.

16207	M code for clamping a workpiece
16208	M code for releasing the workpiece

[Input type] Parameter input

[Data type] 2-word path

[Valid data range] 1 to 255

Parameter No. 16207 sets the M code for clamping a workpiece. Parameter No. 16208 sets the M code for releasing the workpiece.

In blocks between the M code for clamping a workpiece and the M code for releasing the workpiece, the distances traveled along the X-axis and Y-axis are not take into account in the workpiece coordinate system. The PF signal to start pressing is not set to "1".

16209	Clearance and amount of return for the Y axis in automatic repositioning
--------------	---

[Input type] Parameter input

[Data type] Real path

[Unit of data] mm, inch (input unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] 0 or positive 9 digit of minimum unit of data (refer to standard parameter setting table (B))

(When the increment system is IS-B, 0.0 to +999999.999)

Positive 9 digit of minimum unit of data

(When the increment system is IS-B, 0.001 to +999999.999)

Each of the parameters sets the clearance and amount of return for the Y-axis in automatic repositioning (G75).

16211	Amount of return for the Y axis in automatic repositioning
--------------	---

[Input type] Parameter input

[Data type] Real path

[Unit of data] mm, inch (input unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] 0 or positive 9 digit of minimum unit of data (refer to standard parameter setting table (B))

(When the increment system is IS-B, 0.0 to +999999.999)

These parameters specify the amount of return for the Y-axis in automatic repositioning (G75).

The clearance is specified in conventional parameter No. 16209.

4.PARAMETERS FOR THE PATTERN FUNCTION AND THE U/V/W MACRO FUNCTION (1 OF 2)

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NOTE

This parameter is valid when the BKR bit (bit 2 of parameter No. 16204) is set to 1.

16230

number of machined workpieces in multiple-workpiece machining

[Input type] Setting input

[Data type] 2-word path

[Unit of data] sheet

[Valid data range] 0 to 999999999

When U or V macro or subprogram called using a W code ends while multiple-workpiece machining is executed by G73 or G74, this parameter increases by 1.

When the CNC is reset or multiple-workpiece machining is not executed, this parameter sets 0.

5 PARAMETERS FOR THE PUNCH AND LASER SWITCH

	#7	#6	#5	#4	#3	#2	#1	#0
16240			RLM	RPL				

NOTE

When this parameter is set, the power must be turned off before operation is continued.

[Input type] Parameter input

[Data type] Bit path

- #4 RPL** When the system is reset, the punch mode and laser mode:
 0: Can be switched by bit 5 (RLM) of parameter No.16240.
 1: Can not be switched.

- #5 RLM** When the power is turned on or in the clear status, the machine is set in the:
 0: Punch mode.
 1: Laser mode.

	#7	#6	#5	#4	#3	#2	#1	#0
16241					ILM			

[Input type] Parameter input

[Data type] Bit path

- #3 ILM** In a block other than cutting feed blocks or blocks between the two cutting feed blocks when the laser mode is selected, the next block is started:
 0: After the following is checked: The specified speed is reduced to zero and the machine reaches the specified position. (A position check is carried out.)
 1: After checking that the specified speed is reduced to zero.(No position check is carried out.)
 The parameter is validated when bit 0 (ALA) of parameter No. 16242 is set to 1.
 In punching mode, bit 5 (NCI) of parameter No. 1601 is valid.

	#7	#6	#5	#4	#3	#2	#1	#0
16242								ALA

NOTE

When this parameter is set, the power must be turned off before operation is continued.

[Input type] Parameter input

[Data type] Bit

- #0 ALA** Switching between the punch mode and laser mode is:
 0: Invalidated.
 1: Validated.

16244	M code for setting the punch mode
16245	M code for setting the laser mode

[Input type] Parameter input

[Data type] 2-word path

[Valid data range] 0 to 255

Each of the parameters set the M code for setting the punch mode or laser mode.

The parameters are validated when bit 0 (ALA) of parameter No. 16242 is set to 1.

6 PARAMETERS FOR THE TOOL FUNCTION (T FUNCTION) (1 OF 2)

	#7	#6	#5	#4	#3	#2	#1	#0
16260			TNM	TCL				

NOTE

When this parameter is set, the power must be turned off before operation is continued.

[Input type] Parameter input

[Data type] Bit path

- #4 TCL** The T axis is:
- 0: Not controlled by the CNC machine.
 - 1: Controlled the CNC machine.

NOTE

- 1 When this parameter is set to 1, the T axis should be set as a rotation axis. (bit 0 (ROT_x) of parameter No. 1006 is set to 1)
- 2 When this parameter is set to 1, setting the following parameters allows the CNC to be compatible with FANUC Series 0i-PC, as follows:

Setting	Meaning
Bit 0 (ROT _x) of parameter No.1006=1	Rotary axis (A type)
Bit 1 (ROS _x) of parameter No.1006=0	
Bit 0 (ROA _x) of parameter No.1008=1	The rotary axis roll-over is valid.
Bit 1 (RAB _x) of parameter No.1008=0	In the absolute programming, the axis rotates in the direction in which the distance to the target is shorter.
Bit 2 (RRL _x) of parameter No.1008=1	Relative coordinates are rounded by the amount of the shift per one rotation

- #5 TNM** When machine lock signal MLK and the TNG signal for ignoring a T command are on, whether the number following address T is cataloged as a tool number is:
- 0: Not checked.
 - 1: Checked.

NOTE

Generally, the tool number is not checked when the TNG signal is set to "1".

	#7	#6	#5	#4	#3	#2	#1	#0
16262	MBT	DTF	TNA	TND	TDP	PWT	JGT	NTD

[Input type] Parameter input

[Data type] Bit path

- #0 NTD** The tool data input screen and the tool number registration screen for multiple tools are:
 0: Displayed.
 1: Not displayed.
- #1 JGT** On the position display screen in jog mode and incremental (INC) mode,, a T code (tool number) is:
 0: Not displayed by a signal input from the PMC.
 1: Displayed by a signal (addresses G234 to G237) input from the PMC.
- #2 PWT** When the power is turned on, the T code (tool number) on the position display screen is:
 0: Represented by "0".
 1: Represented by signal input from the PMC machine (addresses G234 to G237).
- #3 TDP** On the position screen, a T code is:
 0: Not displayed.
 1: Displayed.

NOTE

This parameter is invalid when the TCL bit (bit 4 of parameter No. 16260) is set to 1 and when the NDPx bit (bit 0 of parameter No. 3115) is set to 0.

- #4 TND** When the T-axis position is displayed,
 0: The current position is indicated in units of minimum travel increments.
 1: The number of the tool at the current position is indicated.

NOTE

This is validated when bit 3 (TDP) of parameter No. 16262 is set to 1.

- #5 TNA** When a tool number which is not cataloged is specified,
 0: Alarm (PS4692) is issued.
 1: No alarm are issued but a T code is output.
- #6 DTF** When T codes are specified in automatic operation, a TF signal for reading the code of the tool function and the tool function code signal are output:
 0: For each T code.
 1: For the first T code command when the machine enters the status in which automatic operation is started from the status in which automatic operation is halted or stopped. For the second and subsequent T code commands specified until the machine returns to the status in which automatic operation is halted or stopped, the TF signal and tool function code signal are output only when the T code signal is different from the previous one.
- #7 MBT** In a block in which a T code is specified, buffering is:
 0: Executed.
 1: Not executed.

	#7	#6	#5	#4	#3	#2	#1	#0
16263		IDX			ROF	TOF	ATO	OFM

[Input type] Parameter input

[Data type] Bit path

- #0 OFM** In a block containing a T command, the tool position is compensated:
 0: Even if there is no movement along an axis.
 1: Only when there is movement along an axis. If a block does not contain any movements along an axis, the compensation is executed in the next block containing movement along an axis.
- #1 ATO** The tool position is compensated:
 0: Only when a tool command is specified.
 1: According to the T code currently specified, even if no tool commands are specified.
- #2 TOF** The function for compensating the tool position is:
 0: Invalidated.
 1: Validated.
 Specify a tool position compensation value on the tool input screen.
- #3 ROF** At reset, compensation of tool position is:
 0: Not canceled.
 1: Canceled.
- #6 IDX** The tool position is not compensated in a block in which no movement along an axis occurs. In the next block containing movement along an axis the tool position is compensated:
 0: For each T code.
 1: Only for T codes with which turret indexing is not executed.

NOTE

This is validated when bit 0 (OFM) of parameter No. 16263 is set to 1.

16265**Total number of tools to be used**

[Input type] Parameter input

[Data type] Word path

[Valid data range] 0 to 136

This parameter specifies the total number of tools to be used by the tool function. If T-axis control is selected (TCL bit (bit 4 of parameter No. 16260) is set to 1), the total number should include the number of tools for which T-axis control (turret index) is not executed. This parameter can be specified on the tool input screen. The tool numbers to be used should be specified on the tool input screen.

16266**Number of tools for which T-axis control is executed**

[Input type] Parameter input

[Data type] Word path

[Valid data range] 0 to 136

This parameter specifies the number of tools for which T-axis control (turret index) is executed. The parameter can be specified on the tool input screen.

NOTE

This parameter is valid when the TCL bit (bit 4 of parameter No. 16260) is set to 1.

16267	Reference-position tool number under T-axis control
--------------	--

[Input type] Parameter input

[Data type] 2-word path

[Valid data range] 0 to 99999999

This parameter specifies the tool number to be selected upon reference position return for the T-axis. The parameter can be specified on the tool input screen.

NOTE

This parameter is valid when the TCL bit (bit 4 of parameter No. 16260) is set to 1.

16269	Punching count for all tools (low-order)
--------------	---

16270	Punching count for all tools (high-order)
--------------	--

[Input type] Parameter input

[Data type] 2-word path

[Valid data range] 0 to 99999999

These parameters preset the punching count for all tools to be used.

Parameter No. 16269 and No. 16270 can be preset on the tool input screen.

	#7	#6	#5	#4	#3	#2	#1	#0
16280	UTL	UTS	UCT	UPC	UTC	UOY	UOX	UT8

NOTE

- 1 When this parameter is set, the power must be turned off before operation is continued.
- 2 This parameter is valid when the function used to set tool data is specified.
- 3 In the following description, n represents the number of tools to be stored in parameter No. 16284.

[Input type] Parameter input

[Data type] Bit path

#0 UT8 As a tool number:

0: Up to eight digits can be input. (n 4-byte numbers)

1: Up to four digits can be input. (n 2-byte numbers)

#1 UOX A tool position compensation value along the X-axis is:

0: Not stored.

1: Stored. (n 8-byte values)

#2 UOY A tool position compensation value along the Y-axis is:

0: Not stored.

1: Stored. (n 8-byte values)

#3 UTC Under T-axis control, the machine position on the T-axis is:

0: Not stored.

1: Stored. (n 8-byte values)

NOTE

When T-axis control is used (TCL bit (bit 4 of parameter No. 16260) is 1), this bit should be set to 1.

- #4 UPC** The punching count of an individual tool is:
 0: Not stored.
 1: Stored. See the description of the PC4 bit (bit 4 of parameter No. 16281).

NOTE

When the tool life management data is used, this bit should be set to 1.

- #5 UCT** Tool numbers for changing tools are:
 0: Not stored.
 1: Stored. The number of digits is the same as that for the UT8 bit (bit 0 of parameter No. 16280).

- #6 UTS** A graphic tool figure is:
 0: Not stored.
 1: Stored. (n 25-byte values)

- #7 UTL** The tool life management data is:
 0: Not stored.
 1: Stored. (n 25-byte values) The data is stored in the same way as for the PC4 bit (bit 4 of parameter No. 16281).

	#7	#6	#5	#4	#3	#2	#1	#0
16281				PC4				

NOTE

- 1 When this parameter is set, the power must be turned off before operation is continued.
- 2 This parameter is valid when the function used to set tool data is specified.
- 3 In the following description, n represents the number of tools to be stored.

[Input type] Parameter input

[Data type] Bit path

- #4 PC4** For the punching count of individual tools:
 0: n four-byte values can be stored. The valid data range is 0 to 99999999.
 1: n two-byte values can be stored. The valid data range is 0 to 65535.

6.PARAMETERS FOR THE TOOL FUNCTION (T FUNCTION) (1 OF 2)

	#7	#6	#5	#4	#3	#2	#1	#0
16282		MTS	CMT		MTR	MOY	MOX	

NOTE

- 1 When this parameter is set, the power must be turned off before operation is continued.
- 2 This parameter is valid when multiple-tool control function and the function used to set tool data is specified.
- 3 In the following description, m represents the number of subtools for a multi-tool to be stored in parameter No. 16286.

[Input type] Parameter input

[Data type] Bit path

- #1 MOX** The tool position compensation value along the X-axis for a multi-tool is:
 0: Not stored.
 1: Stored. (m 8-byte numbers)

NOTE

This parameter is valid when the CMT bit (bit 5 of parameter No. 16282) is set to 1.

- #2 MOY** The tool position compensation value along the Y-axis for a multi-tool is:
 0: Not stored.
 1: Stored. (m 8-byte numbers)

NOTE

This parameter is valid when the CMT bit (bit 5 of parameter No. 16282) is set to 1.

- #3 MTR** The radius of a multi-tool is:
 0: Not stored.
 1: Stored. (m 8-byte numbers)

- #5 CMT** The tool numbers for a multi-tool:
 0: Are the tool holder number plus subtool number. When this is selected, m equals n (number of tools stored).
 1: Consist of the magazine number and subtool number, which are separately stored. (m 2-byte numbers)

- #6 MTS** The graphic tool figure for a multi-tool is:
 0: Not stored.
 1: Stored. (n 25-bytes data items)

NOTE

This bit is valid when the CMT bit (bit 5 of parameter No. 16282) is set to 1.

16284

Number of tools to be stored

NOTE

- 1 When this parameter is set, the power must be turned off before operation is continued.
- 2 This parameter is valid when the function used to set tool data is specified.

[Input type] Parameter input

[Data type] Word path

[Valid data range] 0 to 9999

This parameter specifies the number of tools to be stored for the function used to set tool data.

NOTE

When the amount of size for tool data to be stored exceeds 32KB, the alarm (PW4549) is issued.

16285

Number of digits in the tool number of a subtool for a multi-tool

NOTE

- 1 When this parameter is set, the power must be turned off before operation is continued.
- 2 This parameter is valid when the function used to set tool data is specified.

[Input type] Parameter input

[Data type] Word path

[Valid data range] 0 to 4

This parameter specifies the number of digits that can be specified for the tool number of a subtool for which multiple tool control is executed by the function used to set tool data.

16286

Number of subtools for a multi-tool

NOTE

- 1 When this parameter is set, the power must be turned off before operation is continued.
- 2 This parameter is valid when the function used to set tool data is specified and the CMT bit (bit 5 of parameter No. 16282) is set to 1.

[Input type] Parameter input

[Data type] Word path

[Valid data range] 0 to 9999

This parameter specifies the number of subtools for which multiple tool control is executed by the function used to set tool data.

NOTE

When the amount of size for subtool data and tool data to be stored exceeds 32KB, the alarm (PW4549) is issued.

	#7	#6	#5	#4	#3	#2	#1	#0
16287								EMT

NOTE

When this parameter is set, the power must be turned off before operation is continued.

[Input type] Parameter input

[Data type] Bit

#0 EMT Multiple-tool control is:
0: Not Used.
1: Used.

7 PARAMETERS FOR C–AXIS CONTROL

	#7	#6	#5	#4	#3	#2	#1	#0
16360	CBR		CIP	ACS	MAB	MAI	TWC	SYN

NOTE

When this parameter is set, the power must be turned off before operation is continued.

[Input type] Parameter input

[Data type] Bit path

#0 SYN C-axis synchronous control is:

0: Disabled.

1: Enabled.

#1 TWC C-axis assignment function is:

0: Disabled.

1: Enabled.

#2 MAI The function for compensating the C–axis position is:

0: Invalidated.

1: Validated.

#3 MAB The function B for compensating the C-axis position is:

0: Invalidated.

1: Validated.

#4 ACS Under C–axis synchronous control, synchronization is:

0: Invalidated.

1: Validated.

#5 CIP In G01, G02, and G03 modes, a C–axis command is:

0: Invalidated.

1: Validated.

#7 CBR For a tool for which C–axis control can be executed, a C–axis backlash compensation value is:

0: Not separately specified.

The compensation value set in parameter No.1852 is validated.

1: Separately specified.

The compensation value set in parameter No.1852 is invalidated.

The compensation value for each tool is set in the corresponding parameter among parameter No.16390 to No.16429.

	#7	#6	#5	#4	#3	#2	#1	#0
16362	NRC		CRM		G92	CNT	CR0	RCO

[Input type] Parameter input

[Data type] Bit path

#0 RCO At reset, compensation of C-axis position is:

- 0: Not canceled.
- 1: Canceled.

#1 CR0 When reference position return is performed for the C-axis,:

- 0: C-axis is positioned to the absolute position set in parameter No.1250.
- 1: C-axis is positioned to the 1st reference position.

NOTE

This parameter is effective to automatic reference position return (G28) and reference position return of C-axis under C-axis control.

#2 CNT If a T code with which turret indexing is not executed is specified when the C axis is not at the reference point, the machine is:

- 0: Moved along the C-axis to the reference point.
- 1: Not moved along the C-axis to the reference point.

NOTE

This is validated when bit 5 (CRM) of parameter No. 16362 is set to 0.

#3 G92 Under C-axis control, G92 command for C-axis control is:

- 0: Invalidated.
- 1: Validated.

#5 CRM According to a T command, the machine is:

- 0: Moved along the C-axis to the reference point.
- 1: Not moved along the C-axis to the reference point.

#7 NRC According to the command of automatic return to the reference point (G28), the machine is:

- 0: Moved along the C-axis to the reference point.
- 1: Not moved along the C-axis to the reference point.

NOTE

This is validated when bit 5 (CRM) of parameter No. 16362 is set to 0.

	#7	#6	#5	#4	#3	#2	#1	#0
16363	NDD	C2D		SML	NDC		NDB	G91

[Input type] Parameter input

[Data type] Bit path

#0 G91 For C-axis control, a G91 command is:

- 0: Disabled
- 1: Enabled

#1 NDB Positioning under normal direction control is carried out:

- 0: According to the specification for the 0i-M.
- 1: By handling the C-axis angle immediately before the beginning of the normal direction control mode, as an offset value.

- #3 NDC** Positioning under normal direction control is carried out:
- 0: According to the specification for the 0i-M.
 - 1: By handling the C-axis angle immediately before the beginning of the normal direction control mode, as the direction normal to the next traveling direction.

NOTE

When bit 1 (NDB) and bit 3 (NDC) of parameter No. 16363 are set to 1, the movement specified by bit 1 (NDB) of parameter No. 16363 has priority over the movement by bit 3 (NDC) of parameter No. 16363.

- #4 SML** The T-axis/C-axis simultaneous control function is:
- 0: Disabled.
 - 1: Enabled.

- #6 C2D** C-axis non-synchronization control signal C2DABL<Gn231.7> is:
- 0: Disabled.
 - 1: Enabled.

NOTE

When C-axis synchronization control is used, this parameter is enabled.

- #7 NDD** When circular interpolation (G02, G03) is specified under normal direction control and the rotation insertion angle calculated during normal direction control does not exceed the value is set in the parameter No.5482,:
- 0: The CNC gentles normal direction control axis simultaneously with the X/Y-axis motion. (FANUC Series 0i-PC system compatible specification)
 - 1: The CNC moves normal direction control axis to the end of the block. (FANUC Series 0i-PF system specification)

16364**Upper limit of error under C-axis synchronous control**

[Input type] Parameter input

[Data type] 2-word path

[Unit of data] Detection unit

[Valid data range] 0 to 999999999

When the absolute value of the position error between the C1-axis and C2-axis exceeds the value set in this parameter under C-axis synchronous control, alarm (DS4603) occurs.

NOTE

This parameter is valid when the SYN bit (bit 0 of parameter No. 16360) is set to 1.

16365**Upper limit of error under C-axis synchronous control (during continuous pressing)**

[Input type] Parameter input

[Data type] 2-word path

[Unit of data] Detection unit

[Valid data range] 0 to 999999999

When the absolute value of the position error between the C1-axis and C2-axis exceeds the value set in this parameter while continuous pressing signal NBL is set to "1", alarm (DS4603) occurs.

NOTE

This parameter is valid when the SYN bit (bit 0 of parameter No. 16360) is set to 1.

16368**Maximum compensation in C-axis synchronization**

[Input type] Parameter input

[Data type] Real path

[Unit of data] degree (machine unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] 0 or positive 9 digit of minimum unit of data (refer to the standard parameter setting table(B))

(When the increment system is IS-B, 0.0 to +999999.999)

This parameter specifies the maximum compensation in C-axis synchronization under C-axis synchronous control. If an actual compensation value exceeds this value, alarm (SV0410) occurs in the stop state or during travel.

NOTE

This parameter is valid when the ACS bit (bit 4 of parameter No. 16360) is set to 1.

16370**Number of tool 1 for which C-axis control can be executed****16371****Number of tool 2 for which C-axis control can be executed****16372****Number of tool 3 for which C-axis control can be executed****16373****Number of tool 4 for which C-axis control can be executed****16374****Number of tool 5 for which C-axis control can be executed****16375****Number of tool 6 for which C-axis control can be executed****16376****Number of tool 7 for which C-axis control can be executed****16377****Number of tool 8 for which C-axis control can be executed****16378****Number of tool 9 for which C-axis control can be executed****16379****Number of tool 10 for which C-axis control can be executed****16380****Number of tool 11 for which C-axis control can be executed****16381****Number of tool 12 for which C-axis control can be executed****16382****Number of tool 13 for which C-axis control can be executed****16383****Number of tool 14 for which C-axis control can be executed**

7.PARAMETERS FOR C–AXIS CONTROL

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16384	Number of tool 15 for which C–axis control can be executed
16385	Number of tool 16 for which C–axis control can be executed
16386	Number of tool 17 for which C–axis control can be executed
16387	Number of tool 18 for which C–axis control can be executed
16388	Number of tool 19 for which C–axis control can be executed
16389	Number of tool 20 for which C–axis control can be executed

[Input type] Parameter input

[Data type] 2-word path

[Valid data range] 0 to 99999999

Each of the parameters set the number of a tool for which C–axis control can be executed. C–axis control can be effective for the tool set to this parameter.

16390	C-axis backlash 1
16391	C-axis backlash 2
16392	C-axis backlash 3
16393	C-axis backlash 4
16394	C-axis backlash 5
16395	C-axis backlash 6
16396	C-axis backlash 7
16397	C-axis backlash 8
16398	C-axis backlash 9
16399	C-axis backlash 10
16400	C-axis backlash 11
16401	C-axis backlash 12
16402	C-axis backlash 13
16403	C-axis backlash 14
16404	C-axis backlash 15
16405	C-axis backlash 16
16406	C-axis backlash 17
16407	C-axis backlash 18

16408	C-axis backlash 19
16409	C-axis backlash 20

[Input type] Parameter input

[Data type] Word path

[Unit of data] Detection unit

[Valid data range] -9999 to 9999

Each of these parameters specifies a C–axis backlash for each tool for which C–axis control can be executed (C1–axis backlash under C–axis synchronous control).

The parameter values correspond to the tool numbers specified in parameter Nos. 16370 to 16389, respectively.

NOTE

These parameters are valid when the CBR bit (bit 7 of parameter 16360) is set to 1. When these parameters are valid, the C–axis backlash specified in parameter No. 1852 is invalid.

16410	C2 axis backlash 1
16411	C2 axis backlash 2
16412	C2 axis backlash 3
16413	C2 axis backlash 4
16414	C2 axis backlash 5
16415	C2 axis backlash 6
16416	C2 axis backlash7
16417	C2 axis backlash8
16418	C2 axis backlash 9
16419	C2 axis backlash 10
16420	C2 axis backlash 11
16421	C2 axis backlash 12
16422	C2 axis backlash 13
16423	C2 axis backlash 14
16424	C2 axis backlash 15
16425	C2 axis backlash 16
16426	C2 axis backlash 17
16427	C2 axis backlash 18

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16428	C2 axis backlash 19
16429	C2 axis backlash 20

[Input type] Parameter input

[Data type] Word path

[Unit of data] Detection unit

[Valid data range] -9999 to 9999

Each of these parameters specifies a C₂-axis backlash for each tool for which C–axis control can be executed.

The parameter values correspond to the tool numbers specified in parameter Nos. 16370 to 16389, respectively.

NOTE

These parameters are valid when both the SYN and CBR bits (bits 0 and 7 of parameter 16360) are set to 1. When these parameters are valid, the C–axis backlash specified in parameter No. 1852 is invalid.

16430	C–axis position compensation 1
16431	C–axis position compensation 2
16432	C–axis position compensation 3
16433	C–axis position compensation 4
16434	C–axis position compensation 5
16435	C–axis position compensation 6
16436	C–axis position compensation 7
16437	C–axis position compensation 8
16438	C–axis position compensation 9
16439	C–axis position compensation 10
16440	C–axis position compensation 11
16441	C–axis position compensation 12
16442	C–axis position compensation 13
16443	C–axis position compensation 14
16444	C–axis position compensation 15
16445	C–axis position compensation 16
16446	C–axis position compensation 17

16447	C-axis position compensation 18
16448	C-axis position compensation 19
16449	C-axis position compensation 20

[Input type] Parameter input

[Data type] Real path

[Unit of data] degree (machine unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] 9 digit of minimum unit of data (refer to standard parameter setting table (A))
(When the increment system is IS-B, -999999.999 to +999999.999)

Each of these parameters specifies a C-axis position compensation value (C1-axis backlash under C-axis synchronous control).

These compensated values correspond to the tool numbers set in parameter Nos. 16370 to 16389.

NOTE

The values validated when bit 2 (MAI) of parameter MAI is set to 1.

16450	C2-axis position compensation 1
16451	C2-axis position compensation 2
16452	C2-axis position compensation 3
16453	C2-axis position compensation 4
16454	C2-axis position compensation 5
16455	C2-axis position compensation 6
16456	C2-axis position compensation 7
16457	C2-axis position compensation 8
16458	C2-axis position compensation 9
16459	C2-axis position compensation 10
16460	C2-axis position compensation 11
16461	C2-axis position compensation 12
16462	C2-axis position compensation 13
16463	C2-axis position compensation 14
16464	C2-axis position compensation 15
16465	C2-axis position compensation 16

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16466	C2-axis position compensation 17
16467	C2-axis position compensation 18
16468	C2-axis position compensation 19
16469	C2-axis position compensation 20

[Input type] Parameter input

[Data type] Real path

[Unit of data] degree (machine unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] 9 digit of minimum unit of data (refer to standard parameter setting table (A))
(When the increment system is IS-B, -999999.999 to +999999.999)

Each of these parameters specifies a C₂-axis position compensation value.

These compensated values correspond to the tool numbers set in parameter Nos. 16370 to 16389.

NOTE

These parameters are valid when both the SYN and MAI bits (bits 0 and 2 of parameter No. 16360) are set to 1.

16480	Axis number of C ₂ -axis under C-axis synchronization control
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NOTE

When this parameter is set, the power must be turned off before operation is continued.

[Input type] Parameter input

[Data type] Word path

[Valid data range] 0 to Number of controlled axes

This parameter sets the axis number of the C₂-axis under C-axis synchronization control.

NOTE

1 These parameters are valid when both the SYN bit (bits 0 of parameter No. 16360) are set to 1.

2 C-axis assignment function is enabled, this parameter sets the axis number of the C₂-axis during C-axis assignment function.

8 PARAMETERS FOR THE SAFETY ZONE (1 OF 2)

	#7	#6	#5	#4	#3	#2	#1	#0
16500	YSF		SAT					SF0

NOTE

When this parameter is set, the power must be turned off before operation is continued.

[Input type] Parameter input

[Data type] Bit path

#0 SF0 The safety zone of type:

0: A is used.

1: B is used.

NOTE

When type B is used, punching is inhibited in punching mode and entry is inhibited in laser mode.

#5 SAT When punching is inhibited in the safety zone, the block in which a T command is specified is checked:

0: In advance.

1: After the FIN signal to complete the T command has been received.

#7 YSF When a safety zone check is executed, the inhibited area along the Y axis extends from the values:

0: In the negative direction.

1: In the positive direction.

	#7	#6	#5	#4	#3	#2	#1	#0
16501	SZ8	SZ7	SZ6	SZ5	SZ4	SZ3	SZ2	SZ1

[Input type] Parameter input

[Data type] Bit path

#0 to 7 SFj When a safety zone check is executed, in the #j (j=1 to 8) area,

0: An entry is inhibited.

1: Punching is inhibited.

NOTE

1 To use SZ5 to SZ8, the safety zone area extension function is necessary.

2 When type B of safety zone check is used, this parameter is disabled.

8.PARAMETERS FOR THE SAFETY ZONE (1 OF 2)

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	#7	#6	#5	#4	#3	#2	#1	#0
16502	SOF	ACZ	ZNO	SZI	GSZ	ZIO	SZC	MDP

[Input type] Parameter input

[Data type] Bit path

- #0 MDP** On the safety zone setting display,
 0: The workpiece coordinate system is indicated.
 1: The machine coordinate system is indicated.
- #1 SZC** On the safety zone setting display, the data for:
 0: Any zone can be changed.
 1: Those zones to be set automatically (parameter No. 16534) can be changed.
- #2 ZIO** When the safety zone is automatically set by an external signal, the position of a workpiece holder is detected according to:
 0: The on and off states of the SAFZ signal used to detect the position of a workpiece holder.
 1: The on state of the SAFZ signal used to detect the position of a workpiece holder.
- #3 GSZ** On the graphic screen, the safety zone is checked according to the position of a workpiece holder:
 0: Specified on the safety zone screen.
 1: Specified by graphic parameters.
 (On the graphic screen, this check is executed in an area that is not related to the actual machining check.)
- #4 SZI** Data set on the safety zone setting display is:
 0: Invalidated.
 1: Validated.
- #5 ZNO** In the safety zone area setting screen of the safety zone B specification, :
 0: Number of zone and other number than number of zone can be inputted.
 1: Number of zone can be inputted.
- #6 ACZ** The function used to prevent interference between workpiece holders of:
 0: Type A is used.
 1: Type B is used.
- #7 SOF** In the safety zone check, tool position compensation is:
 0: Not considered.
 1: Considered.

	#7	#6	#5	#4	#3	#2	#1	#0
16503			T16	SF8				

[Input type] Parameter input

[Data type] Bit path

- #4 SF8** The number of safety zones to be used is:
 0: Up to 4.
 1: Up to 8.

NOTE

This parameter is valid if the safety zone area extension function is specified.

#5 T16 The number of tool areas to be used is:

0: Up to 12.

1: Up to 16.

NOTE

This parameter is valid if the safety zone area extension function is specified.

	#7	#6	#5	#4	#3	#2	#1	#0
16504							RTZ	SPA

[Input type] Parameter input

[Data type] Bit path

#0 SPA In the case of type A of the safety zone check, when the end point of positioning is in the safety zone or the tool path is interfered with the safety zone, :

0: An alarm is not given.

1: An alarm is given without moving the axis. (Previous check)

#1 RTZ In the safety zone check, setting area of the circle tool figure is:

0: Disabled.

1: Enabled.

16505	Positive X coordinate for safety zone 1
16506	Negative X coordinate for safety zone 1
16507	Y coordinate for safety zone 1
16508	Positive X coordinate for safety zone 2
16509	Negative X coordinate for safety zone 2
16510	Y coordinate for safety zone 2
16511	Positive X coordinate for safety zone 3
16512	Negative X coordinate for safety zone 3
16513	Y coordinate for safety zone 3
16514	Positive X coordinate for safety zone 4
16515	Negative X coordinate for safety zone 4
16516	Y coordinate for safety zone 4

[Input type] Parameter input

[Data type] Real path

8.PARAMETERS FOR THE SAFETY ZONE (1 OF 2)

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[Unit of data] mm, inch (machine unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] 9 digit of minimum unit of data (refer to standard parameter setting table (A))

(When the increment system is IS-B, -999999.999 to +999999.999)

Each set of the parameters specify safety zone 1, 2, 3, or 4.

Safety zone 5, 6, 7, or 8 are specified by setting each set of the parameters among Nos.16930 to 16941.

NOTE

1 Set four safety zones to be arranged sequentially in the order of #1, #2, #3 and #4 from the origin to positive of the X-axis.

2 Zeros must be specified for zones which need not be specified.

16517	Size of tool area 1 in the X direction
16518	Size of tool area 1 in the Y direction
16519	Size of tool area 2 in the X direction
16520	Size of tool area 2 in the Y direction
16521	Size of tool area 3 in the X direction
16522	Size of tool area 3 in the Y direction
16523	Size of tool area 4 in the X direction
16524	Size of tool area 4 in the Y direction
16525	Size of tool area 5 in the X direction
16526	Size of tool area 5 in the Y direction
16527	Size of tool area 6 in the X direction
16528	Size of tool area 6 in the Y direction
16529	Size of tool area 7 in the X direction
16530	Size of tool area 7 in the Y direction
16531	Size of tool area 8 in the X direction
16532	Size of tool area 8 in the Y direction

[Input type] Parameter input

[Data type] Real path

[Unit of data] mm, inch (machine unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] 0 or Positive 9 digit of minimum unit of data (refer to standard parameter setting table (B))

(When the increment system is IS-B, 0.0 to +999999.999)

In the safety zone check, each set of the parameters specify tool area 1, 2, 3, 4, 5, 6, 7, or 8.

Tool area 9, 10, 11, or 12 are specified by setting each set of the parameters among Nos.16551 to 16558.

Tool area 13, 14, 15, or 16 are specified by setting each set of the parameters among Nos.16942 to 16949.

NOTE

A tool area is selected by signals SZTS0 to SZTS3 input from a PMC machine.

16533**Distance between the position detector of the workpiece holder and the punch**

[Input type] Parameter input

[Data type] Real path

[Unit of data] mm, inch (machine unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] 9 digit of minimum unit of data (refer to standard parameter setting table (A))
(When the increment system is IS-B, -999999.999 to +999999.999)

The parameter sets the distance between the position detector of the workpiece holder and punch.

The sign of the value set in the parameter corresponds to the direction the machine travels along the X-axis, assuming the punch position as zero.

16534**Number of zones to be detected for automatic setting of a safety zone**

[Input type] Parameter input

[Data type] Byte path

[Unit of data] Piece

[Valid data range] 0 to 4(8)

This parameter specifies the number of zones to be detected for automatic setting of a safety zone by an external signal.

NOTE

- 1 This parameter must be specified when automatic setting of a safety zone is executed.
- 2 When the safety zone area extension function is specified and bit 4 (SF8) is set to 1, the maximum allowable data is extended to 8.
- 3 When the set parameter is outside the valid data range, the CNC clamps the internal data to the maximum value and minimum value.

16535**Retraction position from the X-axis reference position for automatic setting of a safety zone**

[Input type] Parameter input

[Data type] Real path

[Unit of data] mm, inch (machine unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] 9 digit of minimum unit of data (refer to standard parameter setting table (A))
(When the increment system is IS-B, -999999.999 to +999999.999)

This parameter specifies a clearance from the X-axis reference position for automatic setting of a safety zone by means of an external signal.

NOTE

Specify a position that is sufficiently distant to allow the speed at which the position of a workpiece holder is detected to become stable.

16536**X-axis rapid traverse rate for automatic setting of a safety zone**

[Input type] Parameter input

[Data type] Real path

[Unit of data] mm, inch (machine unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] Refer to standard parameter setting table (C)

(When the increment system is IS-B, 0.0 to +999000.000)

This parameter specifies an X-axis rapid traverse rate for automatic setting of a safety zone by an external signal.

NOTE

When this parameter is set to 0, the feedrate along the X-axis for automatic detection equals the manual rapid traverse rate (parameter No. 1424).

16537**X-axis rapid traverse time constant for automatic setting of a safety zone**

[Input type] Parameter input

[Data type] Word path

[Unit of data] msec

[Valid data range] 8 to 4000

This parameter specifies an X-axis rapid traverse time constant for the automatic setting of a safety zone by an external signal.

NOTE

When this parameter is set to 0, the X-axis time constant for automatic detection equals the time constant for manual rapid traverse (parameter No. 1620).

16538**Lower limit of position error for movement along the X-axis for automatic setting of a safety zone****16539****Upper limit of position error for movement along the X-axis for automatic setting of a safety zone**

[Input type] Parameter input

[Data type] 2-word path

[Unit of data] Detection unit

[Valid data range] 0 to 99999999 (8 digit)

These parameters specify the lower and upper limits, for the position error for movement along the X-axis, for the automatic setting of a safety zone by an external signal.

NOTE

- 1 These parameters must be specified for automatic setting of a safety zone.
- 2 The values of these parameters must satisfy the following condition:
Parameter No. 16538 < Parameter No. 16539

16540	Width of workpiece holder 1 along the X-axis for automatic setting of a safety zone
16541	Width of workpiece holder 2 along the X-axis for automatic setting of a safety zone
16542	Width of workpiece holder 3 along the X-axis for automatic setting of a safety zone
16543	Width of workpiece holder 4 along the X-axis for automatic setting of a safety zone

[Input type] Parameter input

[Data type] Real path

[Unit of data] mm, inch (machine unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] 0 or positive 9 digit of minimum unit of data (refer to standard parameter setting table (B))

(When the increment system is IS-B, 0.0 to +999999.999)

Each of the parameters specifies the width of a workpiece holder along the X-axis for the automatic setting of a safety zone by an external signal.

The parameter values correspond to safety zones 1 to 4, specified in parameter Nos. 16505 to 16516, respectively.

Safety zone 5, 6, 7, or 8 is specified by setting each set of the parameters among Nos.16950 to 16953.

NOTE

When automatic setting is executed, these parameters must be set.

16551	X dimension of tool area 9
16552	Y dimension of tool area 9
16553	X dimension of tool area 10
16554	Y dimension of tool area 10
16555	X dimension of tool area 11
16556	Y dimension of tool area 11
16557	X dimension of tool area 12
16558	Y dimension of tool area 12

[Input type] Parameter input

[Data type] Real path

[Unit of data] mm, inch (machine unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] 0 or Positive 9 digit of minimum unit of data (refer to standard parameter setting table (B))

(When the increment system is IS-B, 0.0 to +999999.999)

In the safety zone check, each set of the parameters specifies tool area 9, 10, 11, or 12.

Tool area 1, 2, 3, 4, 5, 6, 7, or 8 is specified by setting each set of the parameters among Nos.16517 to 16532.

Tool area 13, 14, 15, or 16 is specified by setting each set of the parameters among Nos.16942 to 16949.

NOTE

A tool area is selected by signals SZTS0 to SZTS3 input from a PMC machine.

16559

Compensation width of tool area along the X-axis for the workpiece holder interference avoidance function

16560

Compensation width of tool area along the Y-axis for the workpiece holder interference avoidance function

[Input type] Parameter input

[Data type] Real path

[Unit of data] mm, inch (machine unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] 9 digit of minimum unit of data (refer to standard parameter setting table (A))

(When the increment system is IS-B, -999999.999 to +999999.999)

Each of the parameters is specified to a margin for the tool area (parameter Nos. 16517 to 16532, Nos. 16551 to 16558, Nos. 16942 to 16949) during the workpiece holder interference avoidance function. The parameter value is added to the tool area width when the interference between the tool area and the workpiece holders is checked to output the WHAL signal <Fn231.5>.

NOTE

When the type B of interference avoidance is used, this parameter is not related to the interference avoidance.

16561

Compensation value used by the function used to prevent interference between workpiece holders

[Input type] Parameter input

[Data type] Real path

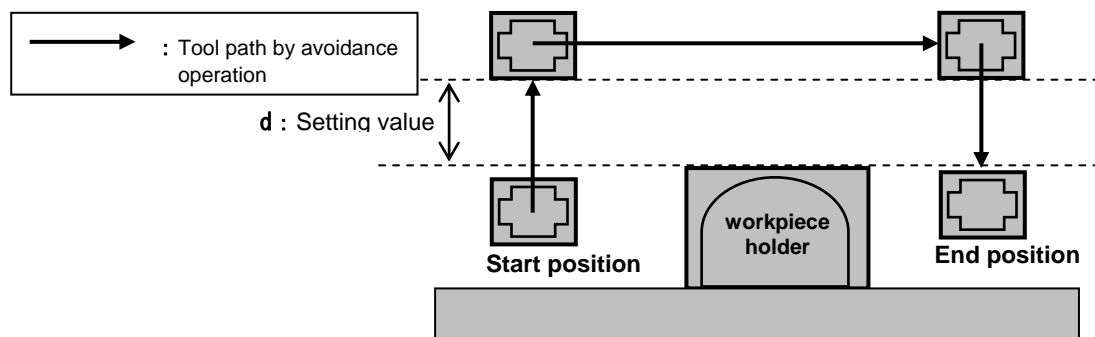
[Unit of data] mm, inch (machine unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] 9 digit of minimum unit of data (refer to standard parameter setting table (A))

(When the increment system is IS-B, -999999.999 to +999999.999)

This parameter specifies a compensation value for retraction along the Y-axis when the function used to prevent interference between workpiece holders of type B is used.



16579

Rapid traverse rate when the interference is avoided while workpiece holder interference avoidance function

[Input type] Parameter input

[Data type] Real axis

[Unit of data] mm/min, inch/min (machine unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] Refer to standard parameter setting table (C)

(When the increment system is IS-B, 0.0 to +999000.0)

This parameter sets the rapid traverse rate when the interference is avoided while workpiece holder interference avoidance function is used.

This parameter is enabled for the X and Y axes.

NOTE

- 1 This parameter is enabled in the block to move on the Y-axis away from workpiece holder while workpiece holder interference avoidance.
- 2 When this parameter is set to 0, Rapid traverse rate when the interference is avoided is set rapid traverse rate for each axis (parameter No.1420).

16580

Rapid traverse time constant when the interference is avoided while workpiece holder interference avoidance function

[Input type] Parameter input

[Data type] Word axis

[Unit of data] msec

[Valid data range] 8 to 4000

This parameter sets the rapid traverse time constant when the interference is avoided while workpiece holder interference avoidance function is used.

This parameter is enabled for the X and Y axes.

NOTE

- 1 This parameter is enabled in the block to move on the Y-axis away from workpiece holder while workpiece holder interference avoidance.
- 2 When this parameter is set to 0, Rapid traverse rate when the interference is avoided is set Time constant used for linear acceleration/deceleration in rapid traverse for each axis (parameter No.1620).

9 PARAMETERS FOR THE DI/DO SIGNALS

16600	Width for which the second reference position signal is output on each axis
16601	Width for which the third reference position signal is output on each axis
16602	Width for which the fourth reference position signal is output on each axis

[Input type] Parameter input

[Data type] Real axis

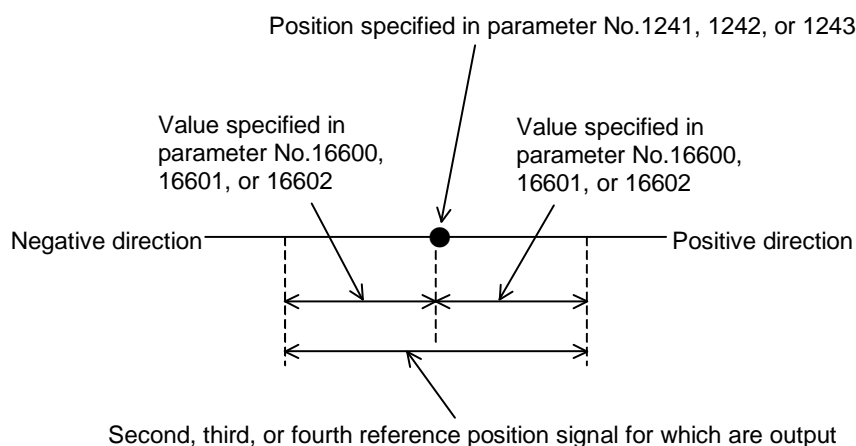
[Unit of data] mm, inch (machine unit)

[Min. unit of data] Depend on the increment system of the applied axis

[Valid data range] 0 or Positive 9 digit of minimum unit of data (refer to standard parameter setting table (B))

(When the increment system is IS-B, 0.0 to +999999.999)

The parameters specify the width for the second, third, or fourth reference position of the machine coordinate system. The second, third, or fourth reference position signal is output within the range shown below:



10

PARAMETERS FOR THE Y–AXIS CRACK CANCEL

16610	M code 1 for canceling the Y–axis crack
16611	M code 2 for canceling the Y–axis crack
16612	M code 3 for canceling the Y–axis crack
16613	M code 4 for canceling the Y–axis crack
16614	M code 5 for canceling the Y–axis crack

[Input type] Parameter input

[Data type] 2-word path

[Valid data range] 0 to 65535

Set an M code for Y-axis crack cancel.

The cancel M–code must be specified in these parameters by different from M–code used for another function. But M02 and M30 are possible.

11

PARAMETERS FOR THE TOOL FUNCTION (T FUNCTION) (2 OF 2)

16680	Position of machine zero point 1 on T-axis
16681	Position of machine zero point 2 on T-axis
16682	Position of machine zero point 3 on T-axis
16683	Position of machine zero point 4 on T-axis
16684	Position of machine zero point 5 on T-axis
16685	Position of machine zero point 6 on T-axis
16686	Position of machine zero point 7 on T-axis
16687	Position of machine zero point 8 on T-axis
16688	Position of machine zero point 9 on T-axis
16689	Position of machine zero point 10 on T-axis
16690	Position of machine zero point 11 on T-axis
16691	Position of machine zero point 12 on T-axis
16692	Position of machine zero point 13 on T-axis
16693	Position of machine zero point 14 on T-axis
16694	Position of machine zero point 15 on T-axis
16695	Position of machine zero point 16 on T-axis

[Input type] Parameter input

[Data type] Real path

[Unit of data] degree (machine unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] 0 or Positive 9 digit of minimum unit of data (refer to standard parameter setting table (B))

(When the increment system is IS-B, 0.0 to +999999.999)

Set each position of machine zero point on T-axis to set each T-axis machine zero point position signal RP1T to RP16T<Fn244 to 245> to "1".

When the machine coordinate of the T-axis matches the position specified in each parameter, each T-axis machine zero point position signal is output.

12 PARAMETERS FOR THE PATTERN FUNCTION AND THE U/V/W MACRO FUNCTION (2 OF 2)

	#7	#6	#5	#4	#3	#2	#1	#0
16747						IMU		SUV

[Input type] Setting input

[Data type] Bit path

- #0 SUV** In the reset state, the macros stored under U or V macro numbers are:
0: Deleted
1: Not deleted.

NOTE

This parameter is valid when the UVC bit (bit 0 of parameter No.16200) is set to 0.

- #2 IMU** The MUR bit (bit 5 of parameter No.16200) is:
0: Enabled.
1: Disabled. In this case, the state is equal with the case when bit 5 (MUR) of parameter No.16200 is set to 0.

	#7	#6	#5	#4	#3	#2	#1	#0
16748		CMU						

[Input type] Parameter input

[Data type] Bit path

- #6 CMU** Using U/V/W macro command together axis command is:
0: Not allowed.
1: Allowed.
In this case, the command in the G code block is considered axis command.
U/V/W macro command should be used alone except for the G code of multi-piece machining function.

13

PARAMETERS FOR THE RAM-AXIS CONTROL

	#7	#6	#5	#4	#3	#2	#1	#0
16760								RAX

[Input type] Parameter input

[Data type] Bit path

NOTE

When this parameter is set, the power must be turned off before operation is continued.

#0 **RAX** RAM-axis control is:

0: Disabled.

1: Enabled.

16761	Advance distance of starting RAM-axis motion before finishing the table positioning ends
-------	--

[Input type] Parameter input

[Data type] Real path

[Unit of data] mm, inch, degree (machine unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] 0 or positive 9 digit of minimum unit of data (refer to standard parameter setting table (B))

(When the increment system is IS-B, 0.0 to +999999.999)

When the remaining motion of X/Y table becomes less than the value of this parameter, the RAM-axis motion is started.

16762	RAM-axis Absolute coordinate of starting the next table positioning before finishing RAM-axis motion
-------	--

[Input type] Parameter input

[Data type] Real path

[Unit of data] mm, inch, degree (machine unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] 9 digit of minimum unit of data (refer to standard parameter setting table (A))

(When the increment system is IS-B, -999999.999 to +999999.999)

In this case is the RAM-axis moves in the direction that goes away from the bottom dead center. When the absolute coordinate of RAM-axis exceeds the boundary value set by this parameter, the X/Y table motion is started.

16767	RAM-axis number
-------	-----------------

[Input type] Parameter input

[Data type] Byte path

[Valid data range] 0 to Number of controlled axes

NOTE

When this parameter is set, the power must be turned off before operation is continued.

Set the axis number of RAM-axis. When this parameter is set to 0, the RAM-axis is ineffective.

16768

Head address of whole RAM-axis motion pattern

[Input type] Parameter input

[Data type] 2-word path

[Valid data range] 0 to 65535

The address is set by the relative address from the head of the PMC extended non-volatile memory with the decimal number.

The memory used is decided by bit 0 (CSR) of parameter No. 16789.

16786

#7

#6

#5

#4

#3

#2

#1

#0

NTI

[Input type] Parameter input

[Data type] Bit path

#6 NTI RAM-axis motion is started:

0: When the time interval by which completion of the X/Y table motion becomes less than the value of parameter No.16012 and the remaining motion of X/Y table becomes less than the value of parameter No.16761.

1: When the remaining motion of X/Y table becomes less than the value of parameter No.16761.

16789

#7

#6

#5

#4

#3

#2

#1

#0

CSR

[Input type] Parameter input

[Data type] Bit path

NOTE

When this parameter is set, the power must be turned off before operation is continued.

#0 CSR Head address of whole RAM-axis motion pattern set by parameter No.16768 is:

0: The address for the PMC expanded non-volatile memory.

1: The address for the C language executor variable area.

14 SPEED AND SERVO PARAMETER SWITCHING PARAMETERS

16800	Nibbling pitch for first stage
16801	Nibbling pitch for second stage

[Input type] Parameter input

[Data type] Real path

[Unit of data] mm, inch (input unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] 0 or positive 9 digit of minimum unit of data (refer to standard parameter setting table (B))

(When the increment system is IS-B, 0.0 to +999999.999)

When using three-stage switching for constant positioning time control for the X- and Y-axes during nibbling, use these parameters to set the nibbling pitches (common to the X- and Y-axes).

When using nibbling parameter switching control using external signal, use these parameters to set the maximum nibbling pitches (common to the X- and Y-axes).

NOTE

1 The setting value of No.16800 should be smaller than the setting value of No.16801.

2 In the case of not using 3rd stage, No.16801 (for 2nd stage) should be set to the maximum valid data. (When the increment system is IS-B, the maximum valid data is +999999.999.)

16804	First stage positioning time for X-axis
16805	Second stage positioning time for X-axis
16806	Third stage positioning time for X-axis
16807	First stage positioning time for Y-axis
16808	Second stage positioning time for Y-axis
16809	Third stage positioning time for Y-axis

[Input type] Parameter input

[Data type] Word path

[Unit of data] msec

[Valid data range] 0 to 254

When using three-stage switching for constant positioning time control for the X- and Y-axes during nibbling, use these parameters to set the positioning times.

16810	PF output time prior to end of first stage positioning for X-axis
16811	PF output time prior to end of second stage positioning for X-axis

14. SPEED AND SERVO PARAMETER SWITCHING PARAMETERS

16812	PF output time prior to end of third stage positioning for X-axis
16813	PF output time prior to end of first stage positioning for Y-axis
16814	PF output time prior to end of second stage positioning for Y-axis
16815	PF output time prior to end of third stage positioning for Y-axis

[Input type] Parameter input

[Data type] Word path

[Unit of data] msec

[Valid data range] -120 to 120

When using three-stage switching for constant positioning time control for the X- and Y-axes during nibbling, each parameter sets the PF output time prior to end of each stage positioning for each axis.

NOTE

These parameters are valid when bit 3 (NPF) of parameter No. 16181 is set to 1.

16816	First stage servo loop gain for X-axis
16817	Second stage servo loop gain for X-axis
16818	Third stage servo loop gain for X-axis
16819	First stage servo loop gain for Y-axis
16820	Second stage servo loop gain for Y-axis
16821	Third stage servo loop gain for Y-axis

[Input type] Parameter input

[Data type] Word path

[Unit of data] 0.01/sec

[Valid data range] 1 to 9999

When using three-stage switching for constant position gain control for the X- and Y-axes during nibbling, use these parameters to set the position gains.

NOTE

These parameters are valid when bit 0 (ILG) of parameter No. 6132 is set to 1.

16822	Velocity loop integral gain for first stage
16823	Velocity loop integral gain for second stage
16824	Velocity loop integral gain for third stage

[Input type] Parameter input

[Data type] Word axis

[Valid data range] 1 to 32767

When using three-stage switching for constant position gain control for the X- and Y-axes during nibbling, use these parameters to set the velocity loop integral gains. (Equivalent to parameter No. 2043)

NOTE

- 1 These parameters are valid when bit 5 (VGC) of parameter No. 16051 is set to 1.
- 2 Only the settings for the X- and Y-axes are valid.

16825	Velocity loop proportional gain for first stage
16826	Velocity loop proportional gain for second stage
16827	Velocity loop proportional gain for third stage

[Input type] Parameter input

[Data type] Word axis

[Valid data range] -32767 to 32767

When using three-stage switching for constant position gain control for the X- and Y-axes during nibbling, use these parameters to set the velocity loop proportional gains. (Equivalent to parameter No. 2044)

NOTE

- 1 These parameters are valid when bit 5 (VGC) of parameter No. 16051 is set to 1.
- 2 Only the settings for the X- and Y-axes are valid.

16828	Velocity loop integral gain for first stage
16829	Velocity loop integral gain for second stage
16830	Velocity loop integral gain for third stage
16831	Velocity loop integral gain for fourth stage
16832	Velocity loop integral gain for fifth stage
16833	Velocity loop integral gain for sixth stage
16834	Velocity loop integral gain for seventh stage

[Input type] Parameter input

[Data type] Word axis

[Valid data range] 1 to 32767

When using seven-stage velocity loop gain switching, use these parameters to set the velocity loop integral gains. (Equivalent to parameter No. 2043)

NOTE

- 1 These parameters are valid when bit 5 (VGC) of parameter No. 16051 is set to 1.
- 2 Only the settings for the X- and Y-axes are valid.

14.SPEED AND SERVO PARAMETER SWITCHING PARAMETERS

16835	Velocity loop proportional gain for first stage
16836	Velocity loop proportional gain for second stage
16837	Velocity loop proportional gain for third stage
16838	Velocity loop proportional gain for fourth stage
16839	Velocity loop proportional gain for fifth stage
16840	Velocity loop proportional gain for sixth stage
16841	Velocity loop proportional gain for seventh stage

[Input type] Parameter input

[Data type] Word axis

[Valid data range] -32767 to 32767

When using seven-stage velocity loop gain switching, use these parameters to set the velocity loop proportional gains. (Equivalent to parameter No. 2044)

NOTE

- 1 These parameters are valid when bit 5 (VGC) of parameter No. 16051 is set to 1.
- 2 Only the settings for the X- and Y-axes are valid.

16842	Limit speed for enabling position gain switching (ordinary machining)
16843	Limit speed for enabling position gain switching (nibbling)

[Input type] Parameter input

[Data type] Word axis

[Unit of data] When a rotation motor is used : 0.01min^{-1}
When a linear motor is used : 0.01mm/min

[Valid data range] 0 to 32767

Set the maximum speed at which the position gain is doubled during automatic operation in ordinary machining mode and nibbling mode. (Equivalent to parameter No. 2028)

NOTE

- 1 These parameters are valid when bit 5 (VGC) of parameter No. 16051 is set to 1 and either or both bit 0 (OADx) of parameter No.6131 and bit 2 (N3S) of parameter No.16050 are set to 1.
- 2 Only the settings for the X- and Y-axes are valid.

	#7	#6	#5	#4	#3	#2	#1	#0
16844		PT2					OVE	

[Input type] Parameter input

[Data type] Bit axis

#1 OVE Rapid traverse override is:

0: Enabled.

1: Disabled. (The override is fixed to 100% at all times.)

#6 PT2 Constant positioning time control is:

0: Disabled.

1: Enabled.

16857	Time during which PF is set to "1" prior to end of positioning for first stage
16858	Time during which PF is set to "1" prior to end of positioning for second stage
16859	Time during which PF is set to "1" prior to end of positioning for third stage
16860	Time during which PF is set to "1" prior to end of positioning for fourth stage
16861	Time during which PF is set to "1" prior to end of positioning for fifth stage
16862	Time during which PF is set to "1" prior to end of positioning for sixth stage
16863	Time during which PF is set to "1" prior to end of positioning for seventh stage

[Input type] Parameter input

[Data type] Byte axis

[Unit of data] msec

[Valid data range] -120 to 120

Set the time during which the press start signal PF<Y004.2> is set to "1" prior to the end of the positioning corresponding to each stage in positioning by optimum acceleration (the press start signal PF<Y004.2> early output function).

These parameters are valid for an axis for which positioning by optimum accelerations is enabled (bit 0 (OADx) of parameter No.6131 is set to 1).

NOTE

If this parameter is set by negative number, the CNC set the press start signal PF<Y004.2> to "1" when the time set in this parameter elapses after the end of the positioning.

16878	Positioning time for first stage (when rapid traverse override is 100% or 75%)
16879	Positioning time for second stage (when rapid traverse override is 100% or 75%)
16880	Positioning time for first stage (when rapid traverse override is 50% or 25%)
16881	Positioning time for second stage (when rapid traverse override is 50% or 25%)

[Input type] Parameter input

[Data type] Word axis

[Unit of data] msec

[Valid data range] 8 to 32760

When using constant positioning time control, set the positioning time for the first and second stages, for each axis.

NOTE

These parameters are valid for those axes for which both bits 0 (OADx) of parameter No. 6131 and 6 (PT2x) of parameter No. 16844 are set to 1.

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PARAMETERS FOR THE SAFETY ZONE (2 OF 2)

16930	Positive X coordinate for safety zone 5
16931	Negative X coordinate for safety zone 5
16932	Y coordinate for safety zone 5
16933	Positive X coordinate for safety zone 6
16934	Negative X coordinate for safety zone 6
16935	Y coordinate for safety zone 6
16936	Positive X coordinate for safety zone 7
16937	Negative X coordinate for safety zone 7
16938	Y coordinate for safety zone 7
16939	Positive X coordinate for safety zone 8
16940	Negative X coordinate for safety zone 8
16941	Y coordinate for safety zone 8

[Input type] Parameter input

[Data type] Real path

[Unit of data] mm, inch (machine unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] 9 digit of minimum unit of data (refer to the standard parameter setting table (A))

(When the increment system is IS-B, -999999.999 to +999999.999)

Each set of the parameters specify safety zone 5, 6, 7, or 8.

Safety zone 1, 2, 3, or 4 is specified by setting each set of the parameters among Nos.16505 to 16516.

NOTE

- 1 When the safety zone area extension function is specified and bit 4 (SF8) is set to 1, these parameters are enabled.
- 2 Set four safety zones to be arranged sequentially in the order of #5, #6, #7 and #8 from the origin to positive of the X-axis.
- 3 Zeros must be specified for zones that need not be specified.

16942	X dimension of tool area 13
16943	Y dimension of tool area 13
16944	X dimension of tool area 14

16945	Y dimension of tool area 14
16946	X dimension of tool area 15
16947	Y dimension of tool area 15
16948	X dimension of tool area 16
16949	Y dimension of tool area 16

[Input type] Parameter input

[Data type] Real path

[Unit of data] mm, inch (machine unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] 0 or positive 9 digit of minimum unit of data (refer to the standard parameter setting table (B))

(When the increment system is IS-B, 0.0 to +999999.999)

In the safety zone check, each set of the parameters specify tool area 13, 14, 15, or 16.

Tool area 1, 2, 3, 4, 5, 6, 7, or 8 is specified by setting each set of the parameters among Nos.16517 to 16532.

Tool area 9, 10, 11, or 12 is specified by setting each set of the parameters among Nos.16551 to 16558.

NOTE

1 When the safety zone area extension function is specified and bit 4 (SF8) is set to 1, these parameters are enabled.

2 A tool area is selected by signals SZTS0 to SZTS3 input from a PMC machine.

16950	Width of workpiece holder 5 along the X-axis for automatic setting of a safety zone
16951	Width of workpiece holder 6 along the X-axis for automatic setting of a safety zone
16952	Width of workpiece holder 7 along the X-axis for automatic setting of a safety zone
16953	Width of workpiece holder 8 along the X-axis for automatic setting of a safety zone

[Input type] Parameter input

[Data type] Real path

[Unit of data] mm, inch (machine unit)

[Min. unit of data] Depend on the increment system of the reference axis

[Valid data range] 0 or positive 9 digit of minimum unit of data (refer to the standard parameter setting table (B))

(When the increment system is IS-B, 0.0 to +999999.999)

Each of the parameters specifies the width of a workpiece holder along the X-axis for the automatic setting of a safety zone by an external signal.

The parameter values correspond to safety zones 5 to 8, specified in parameter Nos. 16930 to 16941, respectively.

Safety zone 1, 2, 3, or 4 is specified by setting each set of the parameters among Nos.16540 to 16543.

NOTE

- 1 When the safety zone area extension function is specified and bit 4 (SF8) is set to 1, these parameters are enabled.
- 2 When automatic setting is executed, these parameters must be set.

16 PARAMETERS FOR THE PROGRAM AUTO RESTART

	#7	#6	#5	#4	#3	#2	#1	#0
16960								RSP

[Input type] Parameter input

[Data type] Bit path

- #0 RSP** If the CNC Restart from the interruption block, restart point is:
 0: the interruption position.
 1: the head position of interruption block (i.e. the position where pre-block is completed movement).

16961	Minimum value of first M code for the processing mode (mode 1)
16962	Maximum value of first M code for the processing mode (mode 1)
16963	Minimum value of first M code for the processing mode (mode 2)
16964	Maximum value of first M code for the processing mode (mode 2)
16965	Minimum value of first M code for the processing mode (mode 3)
16966	Maximum value of first M code for the processing mode (mode 3)
16967	Minimum value of first M code for the processing mode (mode 4)
16968	Maximum value of first M code for the processing mode (mode 4)
16969	Minimum value of first M code for the processing mode (mode 5)
16970	Maximum value of first M code for the processing mode (mode 5)
16971	Minimum value of first M code for the processing mode (mode 6)
16972	Maximum value of first M code for the processing mode (mode 6)
16973	Minimum value of first M code for the processing mode (mode 7)
16974	Maximum value of first M code for the processing mode (mode 7)
16975	Minimum value of first M code for the processing mode (mode 8)
16976	Maximum value of first M code for the processing mode (mode 8)
16977	Minimum value of first M code for the processing mode (mode 9)
16978	Maximum value of first M code for the processing mode (mode 9)

16979	Minimum value of first M code for the processing mode (mode 10)
16980	Maximum value of first M code for the processing mode (mode 10)

[Input type] Parameter input

[Data type] 2-word path

[Valid data range] 0 to 99999999

Each set of the parameters specifies the value range of the 1st M code for each processing mode.

When the M code used in the program satisfies the condition of each mode (i.e. minimum value \leq M code \leq maximum value), this M code is confirmed the 1st M code of the corresponding processing mode.

When restart from the first block command the processing mode, the movement restart from the position in which commanded 1st M code for the processing mode that is enabled at the interruption point

Moreover, in the following case, Setting of the mode is enabled (i.e. the mode is not checked).

-When the set minimum/maximum value is set to 0.

-When the set maximum value is less than the set minimum value.

	#7	#6	#5	#4	#3	#2	#1	#0
16981								RSS

[Input type] Parameter input

[Data type] Bit axis

#0 RSS Program auto restart function for the axis is:

0: Enabled.

1: Disabled.

APPENDIX

A

CHARACTER CODE LIST

Character	Code	Comment	Character	Code	Comment
A	065		6	054	
B	066		7	055	
C	067		8	056	
D	068		9	057	
E	069			032	Space
F	070		!	033	Exclamation mark
G	071		"	034	Quotation marks
H	072		#	035	Sharp
I	073		\$	036	Dollar mark
J	074		%	037	Percent
K	075		&	038	Ampersand
L	076		'	039	Apostrophe
M	077		(040	Left parenthesis
N	078)	041	Right parenthesis
O	079		*	042	Asterisk
P	080		+	043	Positive sign
Q	081		,	044	Comma
R	082		-	045	Negative sign
S	083		.	046	Period
T	084		/	047	Slash
U	085		:	058	Colon
V	086		;	059	Semicolon
W	087		<	060	Left angle bracket
X	088		=	061	Equal sign
Y	089		>	062	Right angle bracket
Z	090		?	063	Question mark
0	048		@	064	Commercial at mark
1	049		[091	Left square bracket
2	050			094	
3	051		¥	092	Yen mark
4	052]	093	Right square bracket
5	053		—	095	Underline

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CHARACTER CODE LIST69

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